

Alumina ends international voyag

A new alumina storage depot is rising on the east bank of the Willamette River in Portland, built for Martin Marietta by Nelson International and engineered by Swan-Wooster Engineering, both of Portland.

Alumina is the middle product in the aluminum refining process; it is refined from bauxite and smelted into aluminum. The alumina spheres to be stored in Portland will originate in the equatorial African Republic of Guinea, as bauxite ore, and will be shipped to St. Croix for refining.

From there, the alumina will travel through the Panama Canal on to Portland, eventually destined for the Martin Marietta potlines in The Dalles and Goldendale, Wash.

Ocean-going ships will unload at the facility in Portland, built at a cost of \$17 million.

The alumina will be stored in large steel tanks, built on platforms erected over steel-pipe pilings, manufactured by Beall Pipe and Tank of Portland.

The pilings are driven over 100 feet into the bank, all the way down to the Troutdale Gravel formation, a layer of compacted gravel which has been fused into a solid structure. The pilings are the longest steel pipe piles ever produced in one length, some up to 130 feet.

The design load of each piling is 300 tons, and in driving the pilings, 90,000 foot-pounds of force was exerted on each driving-stroke. As the pilings reached the gravel layer 100 feet down, it took 100 strokes per foot to sink them. "It was heavy going the last few feet," says Roger Gardner of Swan Wooster, the project manager, "but we know they're in there securely."

The project, which began in June of this year, will be complete and in operation by December, 1981.

Story, photos
by Philip Emerson



ENGINEER Roger Gardner of Swan-Wooster, project manager, and Gary Stokes of L.B.

Foster su

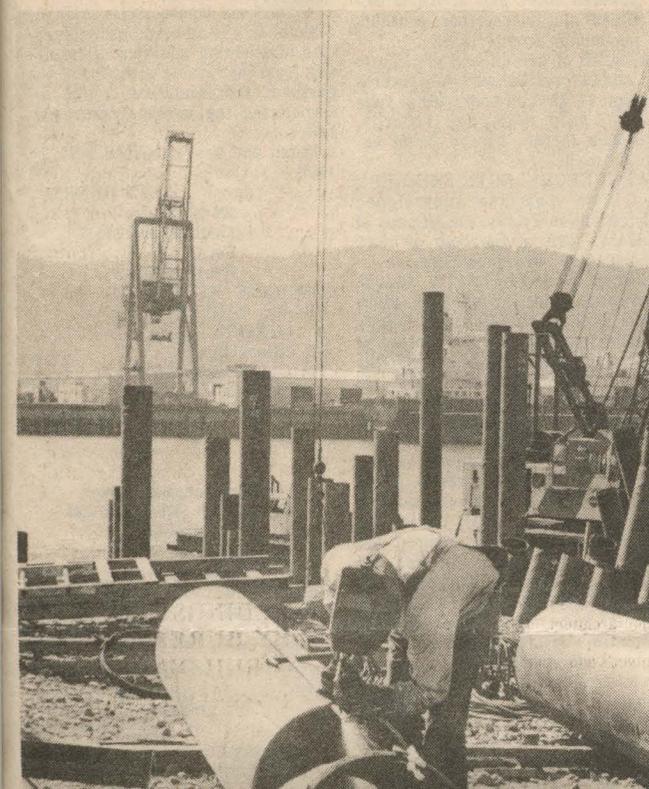


WORK CONTINUES on main platform of alumina storage facility, located near Union

Pacific Rail
minal shou



WORKER READIES hose for another blast in the continuous concrete pour project for construction of the platform on which alumina storage tanks will be built.



DJC 10/13/80

MONDAY, OCTOBER 13, 1980

ational voyage here



ENGINEER Roger Gardner of Swan-Wooster, project manager, and Gary Stokes of L.B.

Foster survey the work at Swan Island site.



WORK CONTINUES on main platform of alumina storage facility, located near Union

Pacific Railroad car yard on Swan Island. Terminal should be complete in 1981.

ALUMINUM INDUSTRY IN THE NORTHWEST FOR 1957

The Pacific Northwest aluminum smelting plants produced 584,100 tons of aluminum in 1957, compared with a production of 623,600 tons in 1956. Even though the region still leads the nation with about 35% of the nation's aluminum smelting capacity, this total represented a production decrease of 6.3% compared to the previous year. This decrease was due largely to softening market conditions toward the end of the year and uncertain power supply as a result of low water conditions.

Of the 584,100 tons smelted in the Northwest, some 246,500 tons were further processed by the region's basic producers during 1957. This tonnage, required for the area's processing of sheet, plate, alloy ingot, rod, wire, cable and extrusions, represented about 42% of the year's total aluminum production in the Northwest.

The following table, compiled from data supplied by the basic producers, indicates the continuing importance of the aluminum industry to the Northwest economy and offers a comparison of the years 1953, 1956, and 1957:

	<u>1957</u>	<u>1956</u>	<u>1953</u>
Average Annual Employment	10,400	11,400	8,700
Salaries & Wages	\$63,500,000	\$63,900,000	\$41,000,000
Freight (rail and truck)	\$35,100,000	\$35,300,000	\$26,100,000
Electric Power Purchased	\$22,500,000	\$22,800,000	\$19,500,000
Northwest Purchase of Materials, Supplies & Services	\$25,800,000	\$32,900,000	\$19,400,000
Taxes (local & state)	4,400,000	\$4,900,000	\$2,210,000
Primary Production Tons	584,100	623,600	473,500
Fabricated Production Tons	246,700	288,200	213,100
Original Plant Cost	\$254,600,000	\$254,600,000	\$190,600,000
Net Additions During Year	\$5,400,000	\$10,200,000	\$6,400,000

Although a comparison of 1956 and 1957 figures indicates a slight percentage decrease, growth trends over the past four years reveal substantial increases.

As an example, the direct cash flow from the industry into the Northwest area in 1957 amounted to \$151.3 million, a decrease of 5.3% from 1956, but represents a 39.8% increase over the \$108 million cash flow from the industry in 1953.

Similarly, average annual employment dropped about 8% to 10,400 from 1956, but this represents a 19.5% growth over the 8,700 employees in 1953.

Salaries and wages were \$63.5 million in 1957, a substantial growth of 54.9% over the \$41 million total of four years ago.

Regional purchases of materials, supplies and services totaled \$25.8 million, an important individual factor in the area economy.

In summary, from the foregoing analysis it seems apparent that even though the Northwest aluminum industry experienced a slight decrease in production during 1957, its economic contribution represented a significant factor in the area economy and has shown substantial growth over the four years studied. It is evident that the aluminum industry exerts a greater impact upon the Northwest economy than is indicated by its direct employment. The cash which the industry released in capital investment, purchases of area supplies and power, and expenditures for taxes far exceeded the total in direct payroll.

At the present time, the Northwest share of aluminum producing capacity is approximately 35% of the nation's total. It is estimated that the Northwest share of the industry's production facilities being built or planned will be 7.6%. Upon completion of these scheduled facilities, the Northwest's percentage of the nation's primary aluminum-producing capacity will have dropped to about 26%. This is due primarily to tremendous capacity increases in the Eastern part of the nation, principally in the Ohio Valley.

Market forecasts by the aluminum producers are generally optimistic. Increasing uses of aluminum in the manufacturing of automobiles and in industrial and home construction are two of the major factors for such optimism.

The industry's research, development and sales promotion activities have uncovered many new and expanded uses for aluminum, which will provide a strong stimulus for increased business upon the return of normal market conditions.

RAW MATERIALS SURVEY, INC.
824 S. W. 5th Avenue
Portland, Oregon

For release: Friday or thereafter
April 4, 1958

Eugene W. Gilman, Manager
CA 8-9411

Pacific Northwest aluminum smelting plants poured a direct cash flow into the Northwest area of \$151.3 million in 1957, according to figures released today by the Raw Materials Survey, a non-profit fact-finding organization with headquarters in Portland, Oregon. This represents a slight decrease of 5.3% from 1956, but represents a 39.8% increase over the \$108 million cash flow from the industry in 1953.

These plants produced 584,100 tons in 1957, a figure which represents a production decrease of 6.3% over the previous year's production. This decrease was due largely to softening market conditions toward the end of the year and uncertain power supply as a result of low water conditions.

Of the 584,100 tons smelted in the Northwest, some 246,500 tons were further processed by the region's basic producers during 1957. This tonnage, required for the area's processing of sheet, plate, alloy ingot, rod, wire, cable and extrusions, represented about 42% of the total aluminum production in the Northwest.

Although a comparison of 1956 and 1957 figures indicates a slight percentage decrease, growth trends over the past four years reveal substantial increases.

As examples:

Average employment dropped about 8% to 10,400 from 1956, but this represents a 19.5% growth over 8,700 employees in 1953.

Salaries and wages were \$63.5 million in 1957, a substantial growth of 54.9% over the \$41 million total of four years ago.

The Raw Materials Survey pointed out that the aluminum industry exerts a greater impact upon the Northwest economy than is indicated by its direct employment. The cash which the industry released in capital investment, purchases of area supplies and power, and expenditures for taxes far exceeded the total of direct payroll. Regional employment which arises through industrial consumption of this metal must also be recognized.

*Ralph you can have
this if you want it - Vern*

MEMORANDUM

TO: R. E. Corcoran

FROM: V. C. Newton

RE: AMAX Warrenton plant. Talk by Ted Briggs, Vice President of AMAX Pacific Division to Oregon Section AIME, May 21, 1971

The AMAX Warrenton Aluminum venture is based upon world competition and supported by a financially powerful consortium which has considered many economic benefits. The consortium consists of six huge firms. Those mentioned were; AMAX, Royal Dutch, Shell, Anaconda, Kaiser and Italc0 (a French company which operates a plant at Bellingham, Washington). Mr. Briggs said that his company wanted to enter the aluminum business a few years ago, not in competition with refineries but in making special materials. AMAX acquired several large factories and purchased metal from Reynolds and Alcoa. Later in order to develop a larger market, the company purchased several manufacturing firms, totaling \$300 million of aluminum markets.

Now fully in the aluminum manufacturing business, AMAX decided to acquire raw material so they obtained large iron and aluminum holdings in north-western Australia. It is this source that will be used to supply Warrenton and Porto Rican plants. The Warrenton operation will be a twin to the Porto Rican plant, both will require approximately 250 mega watts of power. The Porto Rican plant will be on steam in 1973 and Warrenton is scheduled for October 1974. The Warrington operation is economic only because of the 2 mill interruptible power agreed to by the Bonneville Power Administration. Bonneville will supply power to 1986. The AMAX contract is a take or pay basis beginning in 1971(?) costing \$25,000 per month while construction and studies are being completed.

The AMAX consortium purchased the N. W. Aluminum Company holdings in 1970(?) for \$3 million. N. W. had spent \$12 million in preliminary work on the project but apparently much of what was done could not be used by AMAX. The N. W. site has real stability problems and N. W. reportedly lost 2 or 3 D-9 cats while attempting to prepare the site. Mr. Briggs said foundation stabilization would cost \$750,000. Soil conditions are exemplified by the 4 foot sub grade needed for roads into the site. Port facilities are excellent according to Mr. Briggs with 3 very good choices. This is something rare anyplace. The unloading dock is to accommodate 70,000 ton freighters.

Environmental studies are not disturbing to AMAX as the company realizes such standards are here to stay and the problem is world wide. As an example of his company's willingness to cooperate with saving environmental quality, Mr. Briggs referred to the \$12 million tunnel at the Henderson Mine, Colorado, for hauling mine wastes to an acceptable

location. The Oregon Department of Environmental Quality is cooperating in setting up studies for the Warrenton operation. AMAX also has a contract with Battelle Northwest for planning pollution control.

Italco has expertise in air quality control which is superior to anything developed in this country so far. New material and methods will cut fluoride emission to negligible quantities according to Mr. Briggs.

The Warrenton plant will employ 718 persons when on line. Construction and studies prior to this will provide work for many more than this. After production begins, the operation will employ a considerable number of people not directly involved in the plant.

cc: R. S. Mason
Kessler Cannon

RAW MATERIALS FOR ALUMINUM

Needed to make one ton of aluminum metal:

4 tons bauxite = 2 tons alumina = 1 ton aluminum

Reduction of bauxite to alumina requires: lime, soda ash, Caustic soda, calcium carbonate.

To reduce 2 tons of alumina to make 1 ton of aluminum requires:

1300 pounds of carbon

100+ " of various aluminum fluorides

30 man hours of labor

17,000 kwh of electricity

FROM: HARVEY ALUMINUM
19200 S. WESTERN AVENUE
TORRANCE, CALIF.
NEVADA 6-2111, GENE ALFRED

FOR RELEASE TUESDAY, AUGUST 5, 1958

Harvey Aluminum Starts
Primary Production

The first independent aluminum reduction plant in the United States is in operation. Harvey Aluminum, long-time fabricator of aluminum mill products, is now starting regular production at its aluminum reduction facility at The Dalles, Oregon. The company will deliver its first commercial output in approximately 60 to 90 days, shipping primary metal in a wide range of specifications to meet any standard or special requirement. Capacity of the new smelter is more than 100,000,000 pounds of aluminum yearly.

"Our entry into the primary picture, to round out our activities, culminates a ten year program of blood, sweat, and tears," said Lawrence A. Harvey, executive vice president.

(more)

(Harvey Aluminum 2-2-2)

"The achievement of complete integration and status as a major aluminum producer compliments everyone in our organization and demonstrates a cardinal principle of America that a man can go as far as his talents and initiative can carry him."

Located in a scenic setting on the Columbia River 88 miles east of Portland, the facility uses large quantities of Bonneville hydroelectric power generated at The Dalles Dam to produce pig, ingot, and billet. The dam is five miles away.

Designed by Harvey Aluminum engineers, the reduction works incorporates the latest and most efficient equipment and operating techniques. Automatic systems throughout the plant control processes on a quantitative-qualitative statistical basis. The electrolytic cells in which the aluminum is made were designed, engineered, and built by Harvey Aluminum in its Torrance, California plant. The reduction facilities contain two potlines, consisting of 240 pots housed in four separate buildings.

No newcomer to the aluminum industry, Harvey Aluminum has assumed a significant position in the field of fabrication and is acknowledged as the largest independent producer of wrought aluminum mill products such as extrusions, press forgings, impact extrusions, rod and bar, pipe, tube, hollow sections, forging stock, hand forgings, electrical bus bar, structurals, and special shapes.

Sales of primary aluminum are conducted from the company's general offices in Torrance, California, and through factory branches across the country.

(more)

(Harvey Aluminum 3-3-3)

In addition to aluminum, Harvey is a major titanium producer (titanium is a new lightweight metal of the air age, half the weight of steel and more resistant to corrosion than stainless and with the high strength of tool steels); the largest zirconium smelter in the nation (zirconium is a metal of the atomic age with special neutron and elevated temperature properties that make it possible to build the heart of the modern atomic reactor); and a prime supplier of both metals in billet and mill product forms for the metalworking industry. The company also fabricates mill products in steel, magnesium, brass, and rare metals.

#

HARVEY **Aluminum**

(Incorporated)

ALUMINUM
Extrusions & Structurals
Rod & Bar
Tubing & Pipe
Impact Extrusions
Forgings
Screw Machine Products

● GENERAL OFFICES: 19200 South Western Avenue, Torrance, California

January 13, 1959

Your letter December 31st

Mr. Ralph S. Mason
Oregon State Department of Geology
and Mineral Industries
1069 State Office Building
Portladd 1, Oregon

Dear Mr. Mason:

We are still actively pursuing the use of laterites at this time and there is nothing new to report.

We are sending you two news releases which summarize our operation at The Dalles.

Thank you for your continued interest in the activities of our company.

Sincerely,

HARVEY ALUMINUM



Gene Alfred
Director of Public Relations

GA:EP

FROM: HARVEY ALUMINUM
19200 S. WESTERN AVENUE .
TORRANCE, CALIF.
NEVADA 6-2111, GENE ALFRED

12/15/58

FOR IMMEDIATE RELEASE

HARVEY ALUMINUM
ANNOUNCES PIG PRICE

Lawrence A. Harvey, Chairman of the Board of Harvey Aluminum, announced to the Aluminum Extruders Council Conference in Washington, D. C., the company's price for aluminum pig, ingot and billet now being produced at its reduction plant in The Dalles, Oregon. Base price is 24.7¢ per pound for 99% plus purity aluminum pig. The company's normal terms are 30 days net.

Harvey stated that his company's delivered prices will at all times be competitive with any North American continental producer.

Harvey also reiterated the policy announced when plans were first completed for its reduction plant: Special preference will be given to providing a substantial portion of the total output of

(more)

(Harvey Aluminum 2-2-2)

its primary material to non-integrated small business aluminum users.

Harvey's aluminum reduction plant will be operated at its full rate of capacity of 54,000 tons a year. "With announcement of our competitive price policy and with full quantity production," Mr. Harvey said, "there is now no need for any user of aluminum pig, ingot, or billet to stockpile or make forward purchase commitments of primary material beyond immediate current needs."

The Chairman of the Board also announced a full line of foundry ingot for sand, die cast, permanent mold and standard casting alloys. The company has established a special service metallurgical division to compound to customers' specifications any special casting ingot requirements.

Harvey also said that pig and ingot are available in standard nominal weights and sizes of 50 lb., 700 lb., and 1200 lb. In addition, extrusion billets are available from 4-7/16 inches to 32 inches in diameter; special impact slugs are available in every size; and sheet billet is available in all standard rolling mill slab sizes.

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E. WATSON TRI-VALENT HYDROLYSIS TOWERS AND PRECIPITATION UNIT FOR RECOVERY OF THE ALUMINA HYDRATES AND FOR ALUMINA SALTS

FROM
ORTHOSILICATE CLAYS.

E. W. WATSON,
CHEMICAL ENGINEER,

G. A. JORDAN,
CHEMICAL ENGINEER,

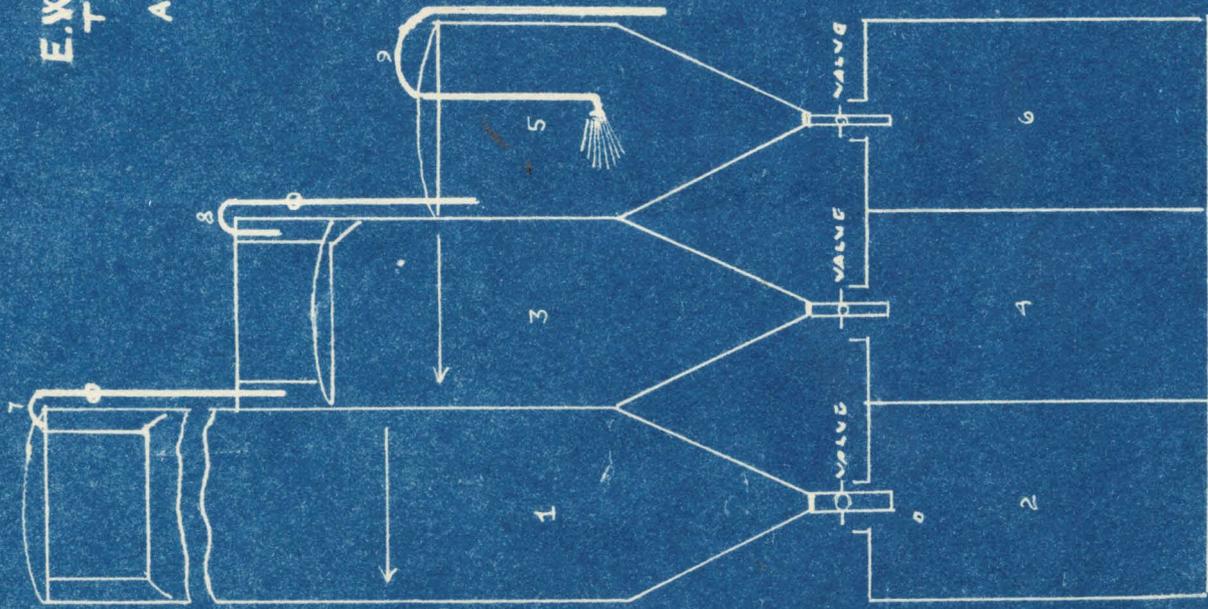
A. W. WEBSTER,
CHEMICAL ENGINEER.

DEC. 15, 1937.

LABORATORIES TESTS
SEATTLE - CHICAGO

CIRCUIT.

- 1- TOWER No. 1
FRACTIONATING ALUMINA
FROM CHEMICAL SOLUTION
- 2- ORTHOSILICATE, FERRIC OXIDE
BY-PRODUCTS FROM SOLUTION
- 3- TOWER No 2
- 6- DEWANTING ALUMINA
HYDRATE
- 4- META SILICATE AND
Mg. FERRIC BY-PRODUCTS
FROM SOLUTION
- 5- SUBMERGED COMBUSTION
PRECIPITATION TANK
- 9- COMBUSTION BURNER
- 6 ALUMINUM SALTS STORAGE



Pot	Bi
Ca	Sb
Sod	Cu
Mg	Hg
Al	Ag
Mn	Pt
Zn	Au
Fe	
Cr	
St	
B	
H	

RESTRICTION

VALENCE

VALENCE IS THE FUNCTION OF THE PERIODICITY OF THE ATOM. MATTER CHANGES BY VIRTUE OF RISING TO A CERTAIN POINT, OR BY PERIODIC ABSORPTION OF ENERGY.

ALL THE PROPERTIES OF THE ELEMENTS ARE PERIODIC FUNCTIONS OF THEIR ATOMIC WEIGHT.

IN THE WATSON PROCESS CONSIDERATION IS TAKEN OF THE FACT THAT ALUMINA (AL₂O₃) IS A TRI-VALENT ABSORBING 3 OF H. AND 1 P. OF Cl. THE CHARGE IN NO. 1 TOWER IS HYDROLIZED IN A RELATIVELY WEAK SOLUTION AT LOW TEMPERATURE AND THE ALUMINA FRACTION SEPARATED FROM THE UNINVOLVED EXCESS ORTHOSILICA AND THE ALUMINA AND INVOLVED SILICATE COLLOID IS DEWANTED INTO TOWER NO. 2. IRON AND Mg. OXIDES ARE REMOVED, AND THE SILICA COLLOID IS DISPERSED BY CHEMICAL REACTION, AND THE PURE (98.10%) ALUMINA HYDRATE IS DEWANTED INTO THE PRECIPITATION TANK FOR PRODUCTION OF ALUMINA SALTS BY THE KOBE SUBMERGED COMBUSTION PROCESS

G. A. JORDAN
DEC. 21 1937
SEATTLE

Handwritten: "WATSON" file

December 1, 1941

Mr. R. M. Gipe
554 Seward Avenue
Bend, Oregon

Dear Mr. Gipe:

Receipt is acknowledged of your letter dated November 29, enclosing a copy of spectrographic analysis of samples submitted by you to Lancks Laboratories in Seattle.

As regards the commercial possibilities for aluminum in this material, I believe that under conditions existing at present, it would be impossible to sell the material as an ore of aluminum. The reason is that the silica runs higher than the limits set by the aluminum companies.

As you probably know, the material used at present for the production of metallic aluminum is bauxite which is mainly aluminum oxide and some water. It usually carries a little silica, but the aluminum companies, up to the present, have been unwilling to accept the material if it ran over 6 or 7% silica. The supply of bauxite has seemed to be adequate for the reduction plants at present in operation. Since the cost of treating the high silica material, such as would be the case in your clay, is much greater than the cost of treating the low silica bauxite, the aluminum companies will not consider treatment of the high silica material. Whether or not they will be obliged to turn to higher silica material in the future, it is impossible to predict.

If this Department can be of any further service, please feel free to call upon us.

Very truly yours,

F. W. Libbey
Mining Engineer

FWL: jr

Bend, Ore. Nov. 29 1941.

State Department of Geology,
Portland, -Ore.

Sirs:

Kindly advise as to the commercial possibilities of the aluminium
in the report of the accompanying spectrographic analysis.

Respy yours,

R M Sipe

554 Seward Ave. Bend, Ore.

RECEIVED
DEC 1 - 1941
STATE DEPT OF GEOLOGY
& MINERAL INDS.

CERTIFICATE

Laucks Laboratories, Inc.

Analytical and Consulting
Chemists · Assayers
Spectrographers
Metallurgists
Engineers

Samplers · Inspectors

911 Western Ave.
Seattle

TACOMA
PORTLAND
VANCOUVER, B. C.
ASTORIA, ORE.
SPOKANE
ABERDEEN

CABLE ADDRESS "LAUX"
ESTABLISHED 1908

BONDED AND AUTHORIZED
BY
NEW YORK PRODUCE EXCHANGE
AMERICAN BUREAU OF SHIPPING
U. S. TREASURY DEPARTMENT
REFEREE CHEMIST
AMERICAN OIL CHEMISTS SOCIETY
MEMBERS OF:
AMERICAN WOOD PRESERVERS ASS'N
AMERICAN COUNCIL OF COMMERCIAL
LABORATORIES
PACIFIC N. W. SECTION OF THE AMERICAN
ASS'N OF CEREAL CHEMISTS
AMERICAN SOCIETY FOR TESTING MATERIALS
AM. INST. MINING & METALLURGICAL ENGRS.
AMER. INSTITUTE OF CHEMICAL ENGINEERS
AMERICAN CHEMICAL SOCIETY
NATIONAL SAFETY COUNCIL

November 19, 1941

Mr. R. M. Gipe
Route 2
554 Seward Ave.
Bend, Oregon

Report No. 77430-A
26D-C1920

Dear Sir:

We hereby certify that we have made a qualitative spectrographic test of the sample of

CLAY

submitted to us by you, and we have to report as follows:

	<u>Estimated Quantities</u>
Aluminum as Al ₂ O ₃ -----	45% to 50%
Silica (SiO ₂) -----	30% to 35%
Calcium as CaO -----	20% to 25%
Magnesium as MgO -----	5% to 6%
Iron as Fe ₂ O ₃ -----	4%
Sodium as Na ₂ O -----	1.8%
Potassium as K ₂ O -----	0.66%
Titanium as Ti -----	0.5%
Copper as Cu -----	0.1%
Vanadium as V -----	0.06%
Manganese -----	Trace
Lead -----	Trace
Tin -----	Trace
Zirconium -----	Trace
Nickel -----	Trace
Cobalt -----	Trace
Strontium -----	Trace
Chromium -----	Trace
Barium -----	Trace

Respectfully submitted

LAUCKS LABORATORIES, INC.

By *J. J. Heffner*

LLH:ok



STATE DEPARTMENT OF GEOLOGY
AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

PRESS RELEASE NO. 69

FOR IMMEDIATE RELEASE

SEPTEMBER 25, 1944

GEOLOGIC REPORT ON HIGH ALUMINA CLAY DEPOSIT NEAR MOLALLA, OREGON

A large deposit of high alumina clay occurs approximately three miles southeast of Molalla, Oregon, about thirty miles south of Portland and about thirty miles north of Salem, where a Government plant is now being constructed to test the extraction of alumina from clay. This clay deposit was investigated by the State Department of Geology and Mineral Industries in 1937. Between July 1942 and May 1943, the deposit was investigated jointly by the U. S. Geological Survey and the U. S. Bureau of Mines. In this latter project, 77 holes having a total footage of nearly 8000 feet were drilled and over 30,000,000 dry tons of measured ore containing 25.7 percent of available alumina and 7.7 percent of available iron were indicated.

A preliminary geological report on the area has been prepared by Dr. Robert L. Nichols, field geologist in the High Alumina Clay Division of the U. S. Geological Survey, and this report together with maps may be examined at the office of the State Department of Geology and Mineral Industries at 702 Woodlark Building, Portland.

Aluminum
Confidential

TO EXECUTIVE COMMITTEE MEETING, SEPTEMBER 27th, 1944

In pursuance of authority and instructions from the Executive Committee, we have been continuing our efforts to secure Governmental approval to move the Baton Rouge alumina-from-bauxite plant to the Pacific Northwest, to explore the bauxite reserves in the Caroline Islands, and to turn the management of the Troutdale reduction plant over to our company. These efforts have been by way of personal discussions beginning in April in Washington D. C. by myself with the proper Governmental authorities, exchanges of letters in April, May, June and July with Mr. Donald M. Nelson, Chairman of the War Production Board, Mr. Philip D. Wilson, Vice Chairman for Metals and Minerals, War Production Board, and Mr. Hans A. Klagsbrunn, Executive Vice President of the Defense Plant Corporation. Mr. Clise also had personal discussions in Washington in May with Mr. Wilson and Mr. Klagsbrunn.

I have recently returned from a six weeks stay in Washington and New York where I was principally concerned with problems having to do with our Salem project, details upon which I have already reported.

While in Washington I took occasion to discuss further the subjects of Baton Rouge, Troutdale, etc. with the authorities, including Donald Nelson, Phil Wilson, George Heikes, Wilbur Nelson, Hans Klagsbrunn, Sam Husbands, various departmental heads of the Anti-Trust Division of the Departments of Justice and Interior, and the Congressional Delegates from Washington, Oregon, and Idaho. Also, Senator O'Myhyony from Wyoming and Mr. Pedell of the Smaller War Plants Corporation.

Nowhere did I encounter serious discouragement nor questions as to the soundness of the general idea of local interests sponsoring, in cooperation with the Government, the development of a completely integrated aluminum industry in the Pacific Northwest. There are, however, three major problems insofar as Washington is concerned:

1. Threatened shut-down of Troutdale.
2. Adverse attitude of departmental heads in W.P.B. to change in management while production is needed for war.
3. Alcoa's contract.

As for number one, a strong case can be made on the economic merits in favor of keeping the Troutdale plant going at least at its present capacity of 50%, so long as any Government plant is to operate, especially if there is a definite proposal from local interests to take it over and keep it going.

Number two is a tough one. The attitude of the departmental heads, Bunker, Wilson, Heikes, is that there is no reason why they should take the responsibility of recommending a change in management when the present management is one of their own selection and is entirely satisfactory. This attitude is not entirely shared by Mr. Donald Nelson who evidenced a constructive, favorable attitude on the occasion of my visit with him on August 24th. Unfortunately, however, he ran off to China the next day.

In my opinion this attitude can be changed, but only through political pressure which in turn can only be brought about by the development of wide supporting public opinion.

The third problem is also a difficult one, but I am also of the opinion that supporting public opinion can be developed to move the Defense Plant Corporation and the Department of Justice to take the necessary steps to work out a satisfactory arrangement with Alcoa.

Mr. Newell Blair, who is well known and well regarded in Washington, and who sat in on some of my conferences with Nelson, Husbands and Klagsbrunn, concurs with me in the above opinions.

So much for Washington.

On the other side of the ledger, as I see it, we also have three major problems:

1. The development and vigorous expression of supporting public opinion.
2. Management.
3. Finances.

With respect to number one, I think we should reach a decision today as to how best to proceed, if we are going to proceed with the development and expression of the necessary supporting public opinion. I am still of the opinion that Frank McCrilles, working under our direction and using the firm of MacWilkins Cole and Weber as counsel is the way to do it, and that it will not cost to exceed \$2500.00. Mac Marshall who was not able to be here today but with whom I discussed the matter in detail, concurs in the idea, leaving the selection of the personnel to this committee.

About the management, I have had lengthy visits with Mr. Barnes whom I think is thoroughly and peculiarly qualified by reason of background and experience to head up our operations to begin with. A younger man, however, should be brought along as an understudy and eventual successor. Good prospective management will be a condition precedent to our working out a deal with the authorities in Washington and I think we can feel sure that after satisfying ourselves and in turn satisfying Washington, we will be confident as to our ability to successfully assume the responsibilities of management.

I have gone about as far as I could go with Barnes without asking him for a firm commitment, which in turn would call for a commitment from us. It is not reasonable to expect Barnes nor anyone else to make a commitment unless we have got money in the bank, a deal and some place to go.

With reference to finances, it is very difficult to project our financial requirements but off hand I would say that we could get a deal, and go a long way on our whole program of Troutdale, Bauxite, Extrusion Plant, etc. with a half million dollars. This figure has been suggested by some of the authorities in Washington.

It is my idea to undertake to negotiate a management-fee deal under which the Defense Plant Corporation will put up all the money, including working capital, our capital to be used merely as a token of our earnestness of purpose and an implement of responsible organization. I would propose that we be paid a fee of one-half ($\frac{1}{2}$) cent per pound or \$350,000.00 per year, whichever is the greater, 40% of which we would agree to spend on research, sales and market development. This would leave us \$210,000.00 per year to pay excess administrative costs, taxes and return on our capital. There is a precedent for this in the Olin Corporation deal whereby they are paid one-half ($\frac{1}{2}$) cent per pound to manage the Tacoma plant, and they have an option (the only one in the aluminum industry) to purchase the plant. At present rate of

operations at Troutdale, 50% or 70,000,000 lbs, one-half cent would be \$350,000.00; at full capacity of 140,000,000 lbs. it would be \$700,000.00 per year. We might not be able to make this kind of a deal, however, since Alcoa's contract calls for the payment of 15% of the profits and Alcoa furnishes the working capital upon which they are paid 3% interest in addition to the 15% of profits. On this basis at the present rate of production Alcoa would make 15% of say 3 cents times 70,000,000 lbs. or \$315,000.00. The working capital requirements are probably around \$1,000,000.00 upon which they would be paid an additional \$30,000.00 or a total of \$345,000.00.

A long range projection of capital requirements and probably profits is not practicable at this time. There is no way of determining what we may be willing to pay for any of these facilities by lease or purchase, what portion, if any of the Baton Rouge and Phoenix plants we may be successful in obtaining, nor how extensive our operations may become. In the memorandum prospectus, however, I have quoted from the recently passed Surplus Property Disposal Act, with particular reference to the part the Smaller War Plants Corporation is authorized to play in this connection.

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If it is the consensus of opinion of this meeting that it is untimely to undertake to raise additional capital at this time, I shall be willing, after organizing our public-opinion-development campaign, to return to Washington and endeavor to work out a deal upon which we can predicate our capital requirements. In some ways my recent visit, from the standpoint of being definitely effective on this program, was somewhat untimely, due to the confusion in the War Production Board, the absence of Donald Nelson and with surplus property and reconversion legislation in the mill. The atmosphere in some respects has cleared, which might enable us to be more effective during the next thirty days.

J. O. Gallagher

PROSPECTUS
of the
ALUMINUM INDUSTRY
in the
PACIFIC NORTHWEST

GOVERNMENT-OWNED FACILITIES IN PACIFIC NORTHWEST:

<u>LOCATION</u>	<u>TYPE</u>	<u>APPROXIMATE COST</u>	<u>ANNUAL CAPACITY</u>	<u>OPERATOR</u>
Troutdale, Ore.	Reduction	\$20,000,000	140,000,000 lbs.	Alcoa*
Spokane, Wash.	"	24,000,000	218,000,000 "	"
" "	Rolling (Sheet)	58,000,000	240,000,000 "	"
Tacoma, Wash.	Reduction	6,500,000	40,000,000 "	Olin**
Salem, Ore.	Alumina-from-clay	4,500,000	36,000,000 "	Columbia***
		\$111,000,000		

*Aluminum Company of America, Pittsburgh, Pennsylvania
**Olin Corporation (Western Cartridge Co.) East Alton, Illinois
***Columbia Metals Corporation, Seattle, Washington
(In course of construction and to be in operation
early part of 1945)

PRIVATELY-OWNED FACILITIES IN PACIFIC NORTHWEST:

Vancouver, Wash.	Reduction	\$17,000,000	172,000,000 lbs.	Alcoa
Longview, Wash.	"	8,000,000	62,000,000 "	Reynolds

ALUMINUM REDUCTION PLANTS OPERATING (September 1944) IN THE UNITED STATES, WITH ESTIMATED COST OF POSTWAR PRODUCTION.

GOVERNMENT-OWNED PLANTS:

LOCATION	Cost of Production CENTS PER LB.	DFC Cost Dec. 1943	Annual Capacity (Million lbs.)	Cumulative Capacity (Million lbs.)	September 1944 Rate of Operation (Million lbs.)	
					Individual	Cumulative
Troutdale, Ore.	10.40 ^a	11.59 ^c	140	140	70	70
Spokane, Wash.	11.34 ^a	11.30 ^c	216	356	142	212
Jones Mill, Ark*	14.97 ^b	12.20 ^c	140	496	108	320
Tacoma	?		40	536	40	360

*Cost: Approximately \$30,000,000

PRIVATELY -OWNED PLANTS: (2 by Reynolds Metals at Longview and Listerhill; all other (5) by Alcoa)

Longview, Wash.	10.40 ^a		62	62	62	62
Vancouver, "	10.40 ^a		172	234)		
Niagara Falls, NY	11.73		42	276)		
Massena, NY	11.73		164	440)	553	615
Alcoa, Tenn.	12.18		340	780)		
Badin, N. C.	12.18		110	890)		
Listerhill, Ala.	12.98		100	990	100	715

- (a) Assumes establishment of Alumina-from-Bauxite plant on Lower Columbia River.
- (b) Assumes use of imported bauxite instead of limited and rapidly depleting Arkansas reserves.
- (c) Does not include Amortization, Interest, Administrative and Selling costs.

It will be noted that the Government-owned plants, exclusive of Tacoma, are operating at rate of 320,000,000 lbs. per year, or 64.2% of capacity, Alcoa at 553,000,000 lbs. or 66.7% of capacity, and Reynolds Metals at Longview, Wash. and Listerhill, Ala. at full capacity. Total current rate of production is 1,075,000,000 lbs. annually, or 70.4% of capacity.

In addition to the Government-owned plants with cumulative capacity of 536,000,000 lbs. shown above, the Government owns, at a cost of over \$100,000,000.00, five (5) plants (high-production -cost plants) at Massena, N.Y., Queens, N.Y., Burlington, N.J., Los Angeles, Calif., and Riverbank, (Modesto) Calif., with total annual production capacity of 795,000,000 lbs. all now completely closed. Thus it is seen that the privately-owned plants are operating at 72% capacity as compared with the Government-owned plants at 27% capacity.

BREAKDOWN OF ESTIMATED POSTWAR COST OF PRODUCING PIG
ALUMINUM IN PACIFIC NORTHWEST TIDEWATER (Troutdale) PLANT.

<u>COST ITEMS</u>	<u>COST</u>
Alumina - 1.95 tons @ 34.56 per ton	\$67.39
Electric Energy - 9½ KW-Hr. per lb.	38.57
Carbon	24.24
Cryolite and flouride	8.75
Labor, direct and supervisory	22.40
Payroll Taxes and industrial insurance	1.12
Miscellaneous Costs	<u>8.31</u>
Total direct costs	170.78
Amortization	10.42
Interest	9.40
Administrative and Selling costs	<u>17.50</u>
Total Overhead Costs	37.32
Total Cost per Short Ton	\$208.10
Total Cost per pound	\$0.1040

ALUMINA, at over 40% of total direct costs, is the largest single item of costs. This cost is based upon the assumption that an Alumina Plant will be established on the Lower Columbia River, using Bauxite imported from the Central or Southwest Pacific.

ESTIMATED COST OF PRODUCING ALUMINA IN THE PACIFIC
NORTHWEST. (1943 Price Level)

<u>COST ITEMS</u>	
Bauxite, 2 tons (note 1) @ \$9.29	\$18.58
Soda Ash .085 tons @ 25.00	2.12
Lime .075 tons @ 15.00	1.13
Fuel	3.33
Supplies	1.25
Labor	4.08
Electric Energy	0.52
Amortization	2.40
Administration and other expenses	<u>1.15</u>
Total	\$34.56

About 1200T baux. per day

Note 1.

Bauxite at the mine, Bintan, Dutch East Indies	4.00 m. t.
Transportation Bintan to Portland	4.32
Duty	1.00
Miscellaneous Costs	<u>1.08</u>
Total per metric ton (2205 lbs)	\$10.40
F.O.B. Portland - Short ton	\$ 9.29

After the war with the employment of company-owned shipping, it is believed

costs could be reduced to around \$30.00 per ton for Alumina. Alumina is now costing the Pacific Northwest plants around \$60.00 per ton.

ALUMINA PRODUCTION CAPACITY. The Government owns an alumina-from-bauxite plant at Baton Rouge, La., costing approximately \$28,000,000., and having a rated capacity of 500,000 tons of alumina per year. This plant is completely idle.

The Government also owns and the Aluminum Co. of America operates a similar but larger plant at Hurrican Creek, Ark., costing approximately \$34,000,000, and having a rated capacity of 777,400 tons per year. This plant is operating at partial capacity.

TOTAL COMMERCIAL ALUMINA* PRODUCTION CAPACITY IN THE UNITED STATES

<u>Location</u>	<u>Capacity (Short tons)</u>	<u>Owner</u>	<u>Operator</u>
East St. Louis, Ill	420,000	Alcoa	Alcoa
Mobile, Alabama	650,000	"	"
Listerhill, Alabama	100,000	Reynolds	Reynolds
Hurrican Creek, Ark.	777,500	Government	Alcoa
Baton Rouge, La.	500,000	"	"
	<u>2,447,500</u>		

*Requires two tons of alumina to make one ton of aluminum.

The East St. Louis plant "was originally built to refine bauxite from Arkansas and since the Arkansas deposits are limited and should be conserved for future emergency uses, it seems doubtful that this plant will be operated at anywhere near full capacity, if at all."

"Alcoa's large and modern plant at Mobile, is well located for the importation and processing of bauxite from South America. It is just about large enough to supply the requirements of Alcoa's Southeastern and Northeastern aluminum reduction plants."

"Reynolds' alumina plant at Listerhill, Alabama, is adequate to supply Reynolds own requirements for reduction at the same place."

"The Hurricane Creek plant will undoubtedly be rendered obsolete by reason of the need to conserve remaining Arkansas bauxite and because it is too far inland to justify economical operations with imported bauxite."

"The Baton Rouge Plant, while well located with respect to tidewater transportation appears, nevertheless, to be excess baggage in postwar alumina production. A better location for this plant would have been in the new center of aluminum production, in the Pacific Northwest."

Present cost to Pacific Northwest of alumina from East St. Louis,
Hurricane Creek, Baton Rouge and Mobile, per lb. of aluminum06 approx.

Estimated cost of alumina from bauxite from South Pacific if pro-
cessed in the Pacific Northwest, per lb. of aluminum03½ "

Thus a reduction in the cost of aluminum of .02½ per lb. can be effected by the estab-
lishment of an alumina plant in the Pacific Northwest.

The islands of Ponape and Yap in the Caroline Islands, mandated to Japan after World War I and now in the process of being taken by United States military forces, are known to have substantial high-grade bauxite reserves. There are also large bauxite reserves at Bintan (near Singapore). It has been suggested that many ships are returning from the South Pacific empty and that they might well be used to back-haul bauxite, thus relieving the shipping congestion in the Caribbean Sea on bauxite from South America, and also the rail congestion on alumina from the Southeast to the Northwest.

ESTIMATED POSTWAR DELIVERED COST OF PIG ALUMINUM
(dollars per short ton)

<u>From</u>	<u>To Chicago</u>	<u>To Detroit</u>	<u>To New York</u>
Pacific N.W. Tidewater-rail	\$253.14	\$254.74	\$259.14
Niagara Falls, N. Y.	255.58	255.07	257.07
Massena, N. Y.	255.87	258.07	259.27
Alcoa, Tenn.	269.57	268.77	270.97
Listerhill, Alabama	284.80	286.20	284.65

Pacific Northwest tidewater plants have an advantage over all other plants with the exception of Niagara Falls to New York, where the differential is \$2.07 per ton in favor of Niagara Falls. However, if Pacific Northwest plants are prepared to make water deliveries with company-owned and operated ships, or private shipping with equivalent rates, the cost would be approximately \$251.32, which would give them an advantage of \$5.75 per ton over the New York State plants.

No other reduction plants come even close to the Pacific Northwest and New York State plants, assuming free competition.

NOTE: Quotations and statistics are from "ALUMINUM - AN INDUSTRIAL MARKETING APPRAISAL" by Nathanael H. Engle, Director, Bureau of Business Research and Professor of Economics and Business, and Homer E. Gregory, Professor of Management and Accounting, and Robert Mosse, Special Research Professor of Economics and Business, University of Washington, Seattle, Washington.

EXTRUSION FACILITIES: With the reduction plants here as indicated and the sheet rolling mill in Spokane already established, and with the establishment of an alumina-from-bauxite plant, the remaining most important link in an integrated aluminum operation is an extrusion forging and tubing plant. There are no such facilities in the Pacific Northwest but the Government can make them available from excess and idle equipment which it owns in uneconomic locations, such as, Phoenix, Arizona, with an investment of \$32,000,000 and operating at only around 25 to 30% of capacity.

DEMAND FOR ALUMINUM: In 1940 total production of Aluminum in the United States was 412,000,000 pounds. The average market price that year for aluminum pig was 18.58 cents per pound, having been reduced from .20 per pound in 1939 when the total production was 327,000,000 pounds. With the advent of the war in Europe and Pearl Harbor, production capacity was successively increased by almost six times to over 2,300,000,000 lbs. and the price reduced to .15 per pound. Production has been cut back over 50% to 1,075,000,000 lbs., the Government-owned plants having been cut back by 75% and the privately-owned plants by 28%. Since Pearl Harbor all production has been exclusively for the war, civilian requirements having been denied, and the price has been maintained at .15 per pound.

The postwar demand for aluminum is difficult to predict. There have been reputable estimates of from 900,000,000 lbs. annually at .15 per pound to 2 or 3 times that amount at moderately reduced prices. Needless to say anyone entering the aluminum industry as

a newcomer must plan on a vigorous research, sales and market-development program as the most essential part of his activities, even assuming the lowest cost competitive operation.

OPPORTUNITIES IN THE PACIFIC NORTHWEST ALUMINUM INDUSTRY: Excerpts from Statement by S. Momet, Chief, Section of Market Analysis, Bonneville Power Administration, before Special Senate Committee, Portland, Oregon, July 28, 1944.

"Since 1940, one of the outstanding developments of the Pacific Northwest has been in the aluminum industry. After the war when other industries contract in the region, aluminum will undoubtedly offer large opportunities for new enterprise. These opportunities will be open to both big and small business--big business in the production of raw and semi-processed materials, small business in manufacturing a variety of finished products out of aluminum."

"The opportunities for small aluminum manufacture will be discussed by the next witness Mr. Miller. I will describe the status of the basic industry in the region and the related problems and opportunities."

"The point that will be brought out by the facts I have to offer is that the Northwest aluminum industry is in a precarious position--definitely out on a dangerous limb. If the dangers are to be averted and the opportunities are to be taken, definite plans must be made very shortly by various business leaders and Federal officials, including the Congress."

"The Northwest aluminum/^{industry} consists of five ingot plants and one rolling mill."

"These plants require enormous amounts of electric energy--as much energy as the entire states of Oregon and Washington used before the war. Electric power normally amounts to about one-fourth of the cost of producing ingot. These plants came to this region because they were able to obtain large amounts of electric power from the Bonneville Power Administration at the lowest wholesale rates in the country. As a result, they are among the lowest-cost producers in the nation."

"They now account for nearly 60 percent of the revenues of the Bonneville Power Administration--nearly \$12,000,000 out of our gross of \$20,000,000 a year. We are, therefore, vitally interested in having as much of this capacity operate after the war as is economically possible."

"The Federal Government owns four of the six plants and has invested in them \$106,000,000. If you consider that half of the Federal investment in the dams and power facilities is now serving the Northwest aluminum industry, then you must add about \$165,000,000 to the Federal interest. The total is about \$271,000,000 of Federal investment directly or indirectly devoted to the aluminum industry in the Northwest."

"Under the Bonneville law, it is the policy of the Bonneville Power Administration to encourage the sale of our power to as many different enterprises and business interests as is feasible. Therefore, we would like to see both full operation of the Northwest aluminum plants after the war and, if at all feasible, operation by a number of enterprises."

This may be possible if the Federal Government properly forms its policy for disposing of the plants and if, at the same time, business interests, including Northwest businessmen, aggressively prepare plans to enter the industry."

"Private enterprise throughout the country and particularly in the Northwest should begin to form plans for operation of some of the Government plants. Flexible terms of lease or sale should be sought, giving enterprise every opportunity to survive the risks that lie ahead when the aluminum industry attempts to expand by many times its prewar production."

"Obviously, all of these possible courses of action call for no half measures. The interest of the Federal Government and of business and workers in the national aluminum industry and particularly in the Northwest aluminum industry is too great and vital to be handled timidly and ineffectively. Vigorous and adequate action by business and Government is indispensable."

THE TROUTDALE REDUCTION PLANT: If the Government, in cooperation with local interests, is going to foster and encourage the development of an integrated aluminum industry in the Pacific Northwest, the Troutdale plant should be made available now, and without further curtailment of operations. It will be difficult, if not out of the question, to interest local capital in taking over these facilities on any reasonable basis if or after they are permitted to close and become idle.

It is understood and recognized that the Aluminum Company of America has a five-year operating contract, only half expired, covering the management of this plant; but it is hoped that Alcoa will, under all the circumstances, consider some suitable quid pro quo for surrendering its contract in advance of expiration.

Quoting from the Baruch-Hancock Report of February 15, 1944:

"Local Ownership" -

"Local groups can be expected to offer to take over Government properties in order to stimulate community industries. As long as fair selling prices or fair rentals are paid-- with sales preferable to rentals -- local ownership should be encouraged. To repeat -- no windfall subsidies should be given to anyone."

"No Monopoly"-

"We suggest the Attorney General be placed on the Surplus Property Policy Board in recognition of the importance of disposing of Government surpluses so as to lessen rather than increase monopoly."

Quoting from the Conference Report of September 14, 1944 on Surplus Property Disposal, and subsequently enacted by Congress, as the "Surplus Property Act of 1944":

"Objectives"

- "Sec. 2. The Congress hereby declares that the objectives of this Act are to facilitate and regulate the orderly disposal of surplus property so as-
- (a) to assure the most effective use of such property for war purposes and the common defense;
 - (b) to give maximum aid in the reestablishment of a peacetime economy of free independent private enterprise, the development of the maximum of independent operators in trade, industry, and agriculture, and to stimulate full employment;
 - (c) to facilitate the transition of enterprises from wartime to peacetime production and of individuals from wartime to peacetime employment;
 - (d) to discourage monopolistic practices and to strengthen and preserve the competitive position of small business concerns in an economy of free enterprise;
 - (p) to foster the development of new independent enterprise;
 - (*) to dispose of surplus property as promptly as feasible without fostering monopoly or restraint of trade, or unduly disturbing the economy, or en-

couraging hoarding of such property, and to facilitate prompt redistribution of such property to consumers;

- (t) except as otherwise provided, to obtain for the Government, as nearly as possible, the fair value of surplus property upon its disposition."

"Disposition of Surplus Property - General Rule"

"Sec. 4. Surplus property shall be disposed of to such extent, at such times, in such areas, by such agencies, at such prices, upon such terms and conditions, and in such manner, as may be prescribed in or pursuant to this Act."

"Surplus Property Board"

"Sec. 5. (a) There is hereby established in the Office of War Mobilization, and in its successor, a Surplus Property Board (hereinafter called the "Board")",

"Declaration and Disposition of Surplus Property"

"Sec. 11. (a) Each owning agency shall have the duty and responsibility continuously to survey the property in its control and to determine which of such property is surplus to its needs and responsibilities."

- (c) Whenever in the course of the performance of its duties under this Act, the Board has reason to believe that any owning agency has property in its control which is surplus to its needs and responsibilities and which it has not reported as such, the Board shall promptly report that fact to the Senate and House of Representatives."

"Small Business"

"Sec. 18. (e) The Smaller War Plants Corporation shall have the power to purchase any surplus property for resale, subject to regulations of the Board, to small business (and is empowered to receive other property in exchange as partial or full payment therefor), when in its judgment, such disposition is required to preserve and strengthen the competitive position of small business, or will assist the Corporation in the discharge of the duties and responsibilities imposed upon it.

- (f) The Smaller War Plants Corporation is hereby authorized, for the purpose of carrying out the objectives of this section, to make or guarantee loans to small business enterprises in connection with the acquisition, conversion, and operation of plants and facilities which have been determined to be surplus property, and, in cooperation with the disposal agencies, to arrange for sales of surplus property to small business concerns on credit or time bases.

"Disposal of Plants"

"Sec. 19. (a) The Board in cooperation with the various disposal agencies, shall prepare and submit to the Congress within three months after enactment of this Act, a report as to each of the following classes of surplus property (not including any plant which cost the Government less than \$5,000,000): (1) aluminum plants and facilities; (2) magnesium plants and facilities." "(9) aircraft plants and facilities and aircraft and aircraft parts; (10) shipyards and facilities; (11) transportation facilities; and (12) radio and electrical equipment."

- (c) Whenever the Board may deem it to be in the interest of the objectives of this Act it may authorize the disposition of any surplus property listed in classes 9 to 12, inclusive, of subsection (a) of this section. With respect to the property listed in classes 1 to 8, inclusive, no

disposition shall be made or authorized until thirty days after such report (or additional report) has been made while Congress is in session, except that the Board may authorize any disposal agency to lease any such property for a term of not more than five years."

"Applicability of Antitrust laws"

"Sec. 20. Whenever any disposal agency shall begin negotiations for the disposition to private interests of a plant or plants or other property, which cost the Government \$1,000,000 or more, or of patents, processes, techniques, or inventions, irrespective of cost, the disposal agency shall promptly notify the Attorney General of the proposed disposition and the probable terms or conditions thereof. Within a reasonable time, in no event to exceed ninety days after receiving such notification, the Attorney General shall advise the Board and the disposal agency whether, in his opinion the proposed disposition will violate the antitrust laws. Upon the request of the Attorney General, the Board or other Government agency shall furnish or cause to be furnished such information as it may possess which the Attorney General determines to be appropriate or necessary to enable him to give the advice called for by this section or to determine whether any other disposition of surplus property violates the antitrust laws."

"Stock Piling"

"Sec. 22(a) All Government-owned accumulations of strategic minerals and metals, including those owned by any Government corporation, shall be transferred by the owning agency, when determined to be surplus pursuant to this Act, to the account of the Treasury Procurement Division and shall be added to the stock pile authorized by the Act of June 7, 1939 (53 Stat. 611) as amended, and shall be subject to its provisions: Provided, That contractor inventory shall be so transferred only when the owning agency has taken possession of and determined such inventory to be surplus. The minerals and metals may be transferred in any form in which they are held, but the owning agency or the Treasury Procurement Division is authorized either before or after such legal transfer to cause such minerals or metals to be put into forms best suited for storage and use for the common defense. As used in this section the phrase "strategic minerals and metals" means copper, lead, zinc, tin, magnesium, manganese, chromite, nickel, molybdenum, tungsten, mercury, mica, quartz crystals, industrial diamonds, cadmium, fluorspar, cobalt, tantalite, antimony, vanadium, platinum, beryl, graphite (and to which may be added aluminum or any other minerals or metals in such quantities or amounts as the Army and Navy Munitions Board may determine to be necessary for the stock pile authorized by the Act of June 7, 1939)".....

- (d) Within three months following the enactment of this Act the Army and Navy Munitions Board shall submit to Congress its recommendations respecting the maximum and minimum amounts of each strategic mineral or metal which in its opinion should be held in the stock pile authorized by the Act of June 7, 1939. After one year from the submission of such recommendations, unless the Congress provides otherwise by law, the Board may authorize the proper disposal agencies to dispose of any Government-owned accumulations of strategic minerals and metals including those owned by any Government corporation when determined to be surplus pursuant to this Act."

"Expiration Date"

"Sec. 38. Unless extended by law, this Act shall expire at the end of three years following the date of the cessation of hostilities in the present war. For the purposes of

this section the term "date of the cessation of hostilities in the present war" means the date proclaimed by the President as the date of such cessation, or the date specified in a concurrent resolution of the two Houses of Congress as the date of such cessation, whichever is the earlier."

There appears to be nothing in this Act that would make it inconsistent on the part of the Defense Plant Corporation (the owning Agency) to refrain from declaring any of its aluminum facilities as surplus property until such time as it becomes "surplus to its needs and responsibilities". But the Act does provide that: "Whenever in the course of the performance of its duties under this Act, the Board has reason to believe that any owning agency has property in its control which is surplus to its needs and responsibilities and which it has not reported as such, the Board shall promptly report that fact to the Senate and House of Representatives."

In the interest of the National welfare it is important and desirable that the Troutdale plant be not closed nor declared surplus property until such time as local interests have been given an opportunity to fit it in to a completely integrated independent privately-owned aluminum industry in the Pacific Northwest.

BAUXITE

General:- The essential ingredient of bauxite is Al_2O_3 and it is widely used in making aluminum sulfate. It also contains varying amounts of iron oxide and silicious matter and generally an amount of TiO_2 varying from a trace to several percent. A high-grade bauxite should contain at least 52% of Al_2O_3 on the dry basis.

Before analysis, the sample should be thoroughly mixed and ground to a fine powder.

Water and Organic Matter:- Ignite 0.5 gram in a weighed platinum crucible, first over a Bunsen burner and finally with a blast lamp to constant weight. Calculate the percentage loss in weight.

Silica:- Weigh 1 gram of the powdered material into a 250-cc. beaker and add 50 cc. of dil. H_2SO_4 (1 : 1). Digest on the hot plate with the beaker covered for 3 hours and then evaporate until white fumes come off strongly. Cool thoroughly, add 100 cc. of water, boil for 10 minutes and then filter and wash with hot water, saving the filtrate. Ignite the insoluble residue in a platinum crucible (which need not be weighed) and finally blast for 15 minutes. Cool in a desiccator and weigh. This residue consists mainly of SiO_2 with a little TiO_2 , Fe_2O_3 and Al_2O_3 .

To determine the SiO_2 , treat ~~and~~ the insoluble matter in the platinum crucible with about 1cc. of dil. H_2SO_4 and then fill the crucible half full of HF. Evaporate off the latter and repeat the operation once. Ignite the residue gently to drive off all H_2SO_4 . Then heat in the full flame of a Meker burner, cool in a desiccator and weigh. Report the loss in weight by the HF treatment as SiO_2 .

Fuse the residue in the crucible with about 1 gram of $KHSO_4$. Cool, and place the crucible with the fused mass in the beaker containing the H_2SO_4 filtrate from the original treatment for SiO_2 . Heat the solution nearly to boiling. There will probably be a slight residue of SiO_2 left. If so, filter it out, ignite, cool, weigh, and add to the SiO_2 previously obtained.

Iron, Aluminum, and Titanium Oxides.² Dilute the above filtrate to 250 cc. in a volumetric flask and, after thoroughly mixing, pipette out 50 cc. into a 400-cc. beaker. Add 250 cc. of water and 10cc. of conc. HCL. Then add a few drops of methyl red indicator (0.2% alcoholic solution) and heat just to boiling. Carefully add conc. NH_4OH until nearly neutralized, then add dil. NH_4OH until the color of the solution changes to a distinct yellow. Boil for 1 or 2 minutes and filter at once. Wash the precipitate thoroughly with hot 2% NH_4Cl solution, and finally once with hot water. Dry the precipitate, ignite over the blast in a weighed platinum crucible cool and weigh as $Al_2O_3 + Fe_2O_3 + TiO_2$. Correct for aliquoting and calculate to percentage.

Titanium Oxide:- Determine the titanium by one of the following methods. The colorimetric method is preferable for small amounts

(a) Gravimetric Method.-- Pipette 100 cc. of the H_2SO_4 solution (equivalent to 0.4 gram) into a 500-cc. beaker and add NH_4OH till a slight permanent precipitate forms. Redissolve this with a few drops of H_2SO_4 and dilute the solution to about 400 cc. Boil thoroughly. (If the solution contains much iron it will be of a yellow color.) Add 10 cc. of a saturated NH_4HSO_3 solution (made by passing a current of SO_2 into conc. NH_4OH) and continue the boiling for at least 1 hour, keeping the volume as near constant as possible. This will precipitate the titanium as TiO_2 . If considerable TiO_2 is present it may be necessary to continue the boiling for several hours to obtain complete precipitation. Filter out the TiO_2 precipitate, using a filter similar to C. S. & S. blue ribbon, and wash with hot water containing a little acetic acid. Dry, ignite in a weighed platinum crucible, cool in a desiccator, and weigh as TiO_2 .

Note:- If the precipitate is yellow, it indicates the presence of Fe_2O_3 . In this case fuse with about 1 gram of $KHSO_4$, take up the fusion with water containing 5% of H_2SO_4 , determine the iron as described below under Ferric Oxide and correct accordingly.

(b) Colorimetric Method:- Pipette 50 cc. of the H_2SO_4 solution (equivalent to 0.2 gram of the sample) into a beaker. Precipitate the Ti, Al, and Fe together with NH_4OH , as previously described. Wash the precipitate moderately and dissolve in 5% H_2SO_4 ; then oxidize in the cold with about 5 cc. of H_2O_2 (ordinary 3% solution). Dilute to 100 cc. in a volumetric flask with 5% H_2SO_4 , and match the color with a standard Ti solution (similarly peroxidized) in 100-cc. Nessler tubes, making proper corrections for dilution.

Note:- The color due to the Fe salts must be corrected for. The simplest method of doing this, although it is not strictly accurate in the presence of considerable amounts of Fe, is to consider 0.1 gram of Fe_2O_3 in 100 cc. of 5% H_2SO_4 solution equivalent to 0.0002 gram of TiO_2 in 100 cc., when oxidized by H_2O_2 . The correction to be applied may be figured from the amount of Fe_2O_3 as determined separately.

Standard Titanium Solution:- Potassium titanium fluoride, K_2TiF_6 , serves as the best starting point for the preparation of the standard solution. Place in a platinum dish sufficient of the salt to make 500-1000 cc. of a standard sulfate solution containing 1 gram of TiO_2 per liter and evaporate several times with conc. H_2SO_4 , without bringing to dryness, until the fluorine is completely expelled. Take up the residue with water containing enough H_2SO_4 to make at least 5% when fully diluted. Then determine the TiO_2 gravimetrically in 2 portions of 50-100 cc. of the prepared solution by diluting further, heating to boiling and precipitating with NH_4OH . Filter, wash thoroughly with hot water, ignite, blast, cool, and weigh as TiO_2 . Duplicates should agree very closely. From the average of the weight found calculate the strength of the solution in milligrams of TiO_2 per cc. The solution should be preserved in a bottle, the stopper of which is coated with vaseline, and the needed quantities should always be withdrawn with a pipette,

never poured. In making an analysis, mix 5 cc. of the standard solution (or 10 cc. if desired) with a sufficient quantity of H_2O_2 and dilute with 5% H_2SO_4 to 50 or 100 cc. in a volumetric flask, according to the original volume taken. Each cc. of the diluted standard will then contain approximately 0.1 milligram of TiO_2 (the exact amount being determined by the analysis).

Ferric Oxide:- Pipette 50 cc. or 100cc. of the original sulfate solution into a beaker and run through a Jones reductor, collecting the reduced solution in a suction flask containing a solution of ferric alum. The tip of the reductor must dip below the surface of the ferric alum solution. Have the solution hot and precede it in the reductor by hot 5% H_2SO_4 solution. Titrate the Fe and Ti together with 0.01 N $KMnO_4$. Deduct the permanganate equivalent to the TiO_2 and also the amount required for a blank run under similar conditions (substituting 50 cc. of 10% H_2SO_4 for the titanium-iron solution) and calculate the difference to Fe_2O_3 .

CALCULATIONS:- 0.001 gram TiO_2 = 1.25 cc. 0.01 N $KMnO_4$.
1 cc. 0.01 N $KMnO_4$ = 0.0008 gram Fe_2O_3 .

Alumina:- Calculate alumina by difference, subtracting from the combined oxides the sum of the Fe_2O_3 and TiO_2 , as determined above.

Notes.- (1) Vanadium and Cr interfere with the titration of Fe and also of Ti. Vanadium ~~is~~, however, does not ordinarily occur in bauxite and its presence would be indicated by an "off" color (brownish or reddish) of the peroxidized solution.

(2) Any P_2O_5 will be included in the precipitate of the combined oxides and a separate correction would have to be made for it. It is very unusual, however, to find more than traces in bauxite.

National Method

The so-called "National Method" of analyzing Bauxite is in quite common use in this country. It is a convenient method when a complete analysis is not desired. The procedure is as follows:

Grind the sample until it will pass a 100-mesh sieve and dry at 105° C. Weigh out 2 grams of the dry material and place in a Kjeldahl digestion flask together with 20 grams of dil. H_2SO_4 (3:2), connect to a reflux condenser and boil for 3 hours. Cool immediately, dilute with water, filter and wash into a 500-cc. volumetric flask. Dilute to the mark with water at room temperature and mix well.

Alumina:- To 50 cc. of the above solution, add 10 cc. of dil. HCl, make slightly alkaline with NH_4OH , and let stand on the steam bath for 10 minutes. Filter through a 15-cm. paper, using a filter

filter pump and slight suction; wash four times with hot water and finally suck the precipitate dry. Ignite at low heat in a weighed platinum crucible and, when the paper is consumed, carefully grind down any lumps in the crucible with a smooth glass rod. Then ignite to constant weight in a blast lamp and cool in a desiccator before weighing. Subtract from the weight obtained the amount of Fe_2O_3 as determined below, and report the difference as Al_2O_3 .

Iron Oxide:-To 100 cc. of the acid solution add a little KClO_3 , evaporate to dryness, dissolve (adding a small amount of moderately strong HCl if necessary), and destroy organic matter by heating with an excess of KMnO_4 . Neutralize with NH_4OH , reduce the iron with a current of SO_2 , boil off the excess of SO_2 , and add a little HgCl_2 solution to insure removal of the last traces. Cool, acidify with H_2SO_4 , and titrate with standard KMnO_4 solution.

References:- The above method is based on the method of the Aluminum Company of America, somewhat modified by experience in this laboratory. See also U. S. Geol. Survey, Bull. 700, 107-109, 155-162.

August 16, 1943

Mr. Jerry Hamifin
United Press Associations
Salem, Oregon

Dear Mr. Hamifin:

Thanks for your note of yesterday with enclosure
of release on the alumina story.

Crack your whip if you think we can help you on
anything else that comes up.

Sincerely yours,

Director

EKN:jr

United Press Associations

SALEM
August 15, 1943

Mr. Earl K. Nixon
Portland

DEAR Mr. Nixon:

Thank you for your attention to my request for background information on Oregon alumina clays.

WE ARE CARRYING the story for release in Monday PM's, Aug. 16. I AM enclosing a copy of the wire version.

I FEEL that I HAVE almost a proprietary interest in Oregon's future, and if this story stimulates public support in efforts to bring that new plant here, I'll BE PLEASED.

Our Olympia bureau manager, Janet Gould, is preparing a piece on alumina clays in Washington, and I'll send you a copy when it moves over the Oregon wire.

Jerry Hannifin
Cordially,
Jerry Hannifin
SALEM.

RECEIVED
AUG 16 1943
STATE DEPT OF GEOLOGY
& MINERAL INDS.

R/S PM's 16

BY JERRY HANNIFIN

UNITED PRESS STAFF CORRESPONDENT

SALEM, ORE., AUG. 16.--(UP)--A NORTHWEST LIGHT METALS INDUSTRY SHOULD BE DEVELOPED TO CUSHION THE ECONOMIC DECLINE IN THE TRANSITIONAL PERIOD TO FOLLOW THE WAR, OREGON POST-WAR PLANNING COMMISSIONER JOHN KELLY DECLARED TODAY.

IVAN BLOC OF THE BONNEVILLE ADMINISTRATION, WHO HAS BEEN COOPERATING WITH THE POST-WAR COMMISSION, HAS ASSEMBLED STATISTICS ON A NORTHWEST LIGHT METALS INDUSTRY, DEALING WITH RELATIVE COSTS, MARKETS AND FREIGHT RATES AS COMPARED WITH SIMILAR FACTORS AT EASTERN POINTS WHICH LONG HAVE DOMINATED THIS FIELD.

BLOC'S STATISTICS SHOWED A MARGIN BETWEEN COSTS AND THE CURRENT PRICE OF ALUMINUM WHICH COULD BE REDUCED SUBSTANTIALLY, WITH AN INVIGORATING INFLUENCE ON THE LIGHT METALS INDUSTRY. BLOC HAS SUGGESTED PRELIMINARY TRAINING BE GIVEN IN NORTHWEST VOCATIONAL SCHOOLS TO PROVIDE AN ADEQUATE SUPPLY OF LIGHT METAL WORKERS TO PRODUCE AND FABRICATE THE METAL.

KELLY EXPLAINED APPROXIMATELY \$100,000,000 OF EMERGENCY PUBLIC WORKS PROJECTS WERE EARMARKED FOR EXPENDITURE IN OREGON DURING THE TRANSITION PERIOD IN WHICH THE NATION'S ECONOMY WILL ADJUST ITSELF TO PEACETIME FORCES OF SUPPLY AND DEMAND.

"THE DEVELOPMENT OF A NORTHWEST ALUMINUM INDUSTRY WOULD BE OF EXTREME IMPORTANCE IN SUCH A PROGRAM," HE SAID.

EARL K. NIXON, DIRECTOR OF THE STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES, EXPLAINED COMMERCIALY IMPORTANT ALUMINUM OXIDE IS FOUND IN BAUXITE, A CLAY ORE WHICH CONTAINS MIXTURES OF OTHER MATERIALS. THE METAL CLINGS TO ITS OXYGEN WITH SUCH TENACITY THAT ONLY

MINUTE PARTICLES OF THE PURE METAL WERE PRODUCED BEFORE 1826, AND ITS COMMERCIAL PRODUCTION ON EVEN A MODERATE SCALE IS A DEVELOPMENT OF THE LAST 40 YEARS.

NIXON TRACED THE STUDY OF HIGH ALUMINA CLAYS IN WESTERN OREGON SINCE 1937, AND THE DEVELOPMENT OF THE ACID PROCESS SELECTED BY THE COLUMBIA METALS COMPANY. THIS PROCESS REQUIRES CONSIDERABLE QUANTITIES OF SULPHURIC ACID WHICH MUST BE BROUGHT IN TANK CARS, AND IN ADDITION TO THE RAW CLAY, LARGE AMOUNTS OF OIL AND COAL, TOGETHER WITH LIMESTONE.

THE WAR PRODUCTION BOARD EARLY THIS YEAR APPROVED CONSTRUCTION OF A PACIFIC NORTHWEST PLANT TO UTILIZE HIGH ALUMINA CLAYS FOR MANUFACTURE OF THE OXIDE ALUMINA, WHICH WOULD BE SHIPPED FOR CONVERSION TO THE PLANTS OF THE ALUMINUM CORPORATION OF AMERICA OR THE REYNOLDS METALS COMPANY PLANT ON THE COLUMBIA RIVER.

"THERE IS NO SCARCITY OF THIS HIGH ALUMINA IN THE PACIFIC NORTHWEST," NIXON DECLARED. "THE FUTURE OF THE INDUSTRY DOES NO REST ON MERE TONNAGE BUT LARGELY ON METALLURGY, WHICH WILL BE ALL-IMPORTANT IN DETERMINING COSTS OF PRODUCTION."

ONE OF THE BEST DEPOSITS IN THE PACIFIC NORTHWEST IS AT COTTAGE GROVE ORE., WHILE CASTLE ROCK, WASH., AND MOLALLA, ORE., ALSO HAVE GOOD DEPOSITS OF CLAY, NIXON SAID.

HOWEVER, TWO WEEKS AGO DONALD M. NELSON OF THE WPB AND PAUL V. MCNUTT WARNPOWER DIRECTOR, ANNOUNCED A DECISION AGAINST ESTABLISHMENT OF THE ALUMINA PLANT ON GROUNDS THERE WAS A LABOR SHORTAGE IN THE AREA.

GOV. EARL SNELL OF OREGON HAS WIRED NELSON AND MCNUTT EXPLAINING THERE MIGHT BE A MANPOWER SHORTAGE IN NORTHWEST AREAS SUCH AS SEATTLE, PORTLAND AND SPOKANE, BUT THERE WAS NO SHORTAGE IN IDEALLY SITUATED CITIES REMOVED FROM THE WAR INDUSTRY ZONES.

"I OFFER YOU FULL COOPERATION OF THIS STATE IN PLACING THIS PLANT IN ECONOMIC LOCATION WHERE ITS CONSTRUCTION AND OPERATION WILL NOT AFFECT

MANPOWER PROBLEM OF CONGESTED AREA. THE GOVERNOR'S TELEGRAM READ

KELLY SAID IF THE NEW ALUMINA REDUCTION PLANT WERE AWARDED OREGON AN IDEAL SITE, OFFERING VARIOUS MODES OF TRANSPORTATION MIGHT BE FOUND AT COTTAGE GROVE, NEAR EUGENE, OR CANBY, NEAR THE MOLLALLS DEPOSITS.

"COLUMBIA METALS CORPORATION WOULD FIND THE 100 OR SO MEN WHO WOULD BE REQUIRED 12 MONTHS FROM NOW FOR STEADY WORK AT THE PLANT, ALMOST IMMEDIATELY OBTAINABLE AND WILLING TO STAY IN THE BUSINESS," KELLY SAID.

OREGON MINERAL INTERESTS HAVE EXPRESSED CONCERN THE COMPANIES NOW OPERATING ALUMINUM PLANTS IN THE NORTHWEST MIGHT CHOOSE TO ABANDON THIS AREA FOLLOWING THE WAR.

"OREGON CAN PRODUCE THE MATERIALS, THE MANPOWER AND THE METAL ON A PERMANENT BASIS," KELLY DECLARED. "THE ORIENT AFTER PEACE WILL BE AN EASILY ACCESSIBLE MARKET FOR OREGON-MADE ALUMINUM AND THE COMPANIES WHO LAY THE GROUNDWORK NOW WILL REAP A TREMENDOUS ADVANTAGE IN THE PERIOD TO FOLLOW THE WAR."

alumina

August 12, 1943 .

Mr. Jerry Hannifin
United Press
c/o Capitol Journal
Salem, Oregon

Dear Mr. Hannifin:

The attached very rough draft of data and background of the alumina clay plant and industry are being sent you as a result of your telephone request of yesterday afternoon.

I hope you will find something of interest in it, or something you can use. Please call me back on any details which are not clear.

Very cordially yours

Director

EKN:ff
Enclosure

File Copy

ALUMINA FROM OREGON CLAYS.

The first serious study of high alumina clays in western Oregon was undertaken by the Oregon State Department of Geology and Mineral Industries beginning in the fall of 1937. The result of this study was published as Bulletin No. 6 of the Department in 1938. This bulletin gives location details and analyses of the well-known Hobart Butte and Molalla clays localities, as well as many others in the Willamette region.

When the U. S. Bureau of Mines and U. S. Geological Survey undertook to explore in detail some of these clays, having in mind their possible utilization for the production of ~~aluminum~~ and later the metal, aluminum, the studies and analyses given in Bulletin No. 6 were used as a basis of research. Dr. Nichols of the U.S.G.S. has written the Department that these original studies were largely responsible for the later detailed exploration for high alumina clays by the Federal Agencies.

It has been known for many years that the oxide, alumina, such as is used in the production of metallic aluminum could be obtained from clays, but until about a year ago, no process had been discovered ^{in this country} that gave promise of utilizing clays to produce aluminum cheaply. It is admitted even now that if there were large domestic deposits of high-grade bauxite, there would be little point in utilizing high alumina clays in this country, but domestic deposits of bauxite, largely in the State of Arkansas, can last but a limited time under the present forced production necessary in the war emergency. Foreign supplies of bauxite such as ^{in the} ~~British~~ Guiana in South America, and ~~in France~~, were for a time virtually cut off by the submarine menace. That situation led to increased effort to solve the metallurgy of high alumina clays.

In this latter effort U. S. Bureau of Mines was very active. The process selected by Columbia Metals Company and worked out in detail in a pilot plant by the Chemical Construction Company, subsidiary of American Cyanamid Corporation, is understood to be analogous to the process developed by the U. S. Bureau of Mines. It is known as the acid process and requires considerable amounts of sulphuric acid that must be brought in in tank cars. It also requires in addition to the clay raw material itself, substantial quantities of fuel, oil or coal or both, together with limestone.

Since not too much is known even yet about the economics of a commercial alumina ^{from clay} industry, the War Production Board was reluctant to approve installation of a commercial-sized plant. Also such a plant would use in its construction considerable tonnages of critical materials. There is a scarcity on the west coast at the present time of commercial acid and the proposition of building new acid plants would require an inordinate amount of critical materials. Claims have been made that the aluminum interests have fought installation of a plant in the Pacific Northwest to make alumina out of clays.

At any event the War Production Board decided to approve, and did approve construction of a plant for a Pacific Northwest location to utilize high alumina clays for the manufacture of the oxide, alumina. This alumina, a powder, will be shipped to the plants of the Aluminum Corporation of America or the Reynolds Metals Company plant on the Columbia River, where it will be converted electrically into the metal, aluminum. The capacity of the proposed plant will be approximately 50 tons of alumina per day and it will require roughly 200 tons of clay per day to produce that amount of oxide. It is not believed that this size plant could possibly operate profitably in normal times because the unit cost of operation is much higher for a small plant than it is

for a large plant. The importance of this plant, however, may be out of all proportion to its size or capacity. By utilizing ordinarily high alumina clays, metallurgical refinements may be made and new kinks, methods, or short-cuts may be discovered which in time may permit a complete conversion from orthodox methods of making aluminum from the natural bauxite to a new method of making this important metal from "common clay" deposits of which may be found to be ~~rather~~ ^{rather} fairly widely distributed in the United States.

It can be truly said that there is no scarcity of this high alumina clay in the Pacific Northwest. Relatively speaking, there is "oodles of it." The future of the industry then does not rest on tonnage but largely on metallurgy, which, in turn, will be ^{all-} important in the determination of cost of production. Transportation materials will be the other large element in the cost of production.

There is a feeling in the War Production Board that present aluminum plant capacity developed largely because of the war emergency, is considerably in excess of the plant capacity necessary to supply the after-the-war requirements. If this is true, then the Pacific Northwest alumina and aluminum plants may easily be so much excess baggage, if we accept the view of eastern industrialists. The latter, ~~we~~ ^{it is alleged} feel, have been instrumental in preventing installation in the Pacific Northwest of more extrusion plants and fabricating plants, both of which would assist in keeping a permanent industry in this part of the country. We in the Northwest feel that the ascendancy of light metals in the construction scheme of things may well account for an after-the-war demand for aluminum big enough to take the production from all existing plants.

A comparison or recital of statistics of aluminum consumption and production for various years during the last dozen years if available, which they are not, would be illuminating, but an analysis of them would supply a meager basis on which to prophesy the future of the alumina clay industry. In general

the rich deposits in Guiana, South America, on which we in the United States normally depend, will by no means last forever. They are substantial, but we would much prefer to develop an aluminum industry based on domestic clays for future security. The element that is as yet uncertain is, what will it cost to produce aluminum from these high alumina clays?

Governor Snell of Oregon has accurately pointed out the absurdity of the statement that this alumina plant proposition should be given up because of the manpower situation. There is no critical lack of the kind of labor, largely unskilled, that would be required in plant construction, and the number of men that would be required to operate the plant a year or more hence is small enough that it would be inconsequential.

The Pacific Northwest people should recognize in this relatively modest alumina plant proposition, not just a new plant to cost \$4,000,000 to be tossed in the general bag of Northwest industries, but, rather it should be considered as a germ or egg that may, if it grows and thrives, develop into a permanent industry that should have a very far-reaching economic effect in the entire Pacific Northwest where low-cost electrical power is an important influence.

OREGON STATE COLLEGE
School of Engineering and Industrial Arts
Corvallis, Oregon

COPY

May 1, 1944

Subject: Pedersen Alumina Process

This writing complies with your telephone request for information on the Pedersen process for production of alumina.

The process is now old art, the patents being granted in 1925 and admitted to patent in practically every country in the world in 1925, 26, or 27. Although it is known that some recent researches have been conducted using the basic principles of the process, there are no publications of recent date which refer to the process as such. It would be obvious that the U.S.B.M. and others in their reviews of the various well known methods for making alumina would have covered the elements of the Pedersen method. However, a quite complete search of current literature failed to reveal any reports on the results of recent studies.

The process consists essentially of the smelting of a mixture of iron ore, coke, lime and aluminous material to produce a molten calcium aluminate slag. It is reported that this slag contains from 30 to 50% alumina and 5 to 10% silica. The slag is crushed and leached with hot sodium carbonate-hydroxide solution. Calcium carbonate and silica are thrown down as a sludge and the alumina is placed in solution as sodium aluminate. The leaching operations are patented in an additional series of world patents granted to Pedersen in 1927. The sodium aluminate solution is treated to throw the aluminum down as the hydrate after which it is calcined in the usual manner. The alkaline solution is then recycled with make up and is used to leach additional quantities of slag.

The process was placed in commercial operation in Norway in 1928, and was checked by the Bureau of Mines in cooperation with the Aluminum Company of America at the same time. The U.S.B.M. study was reported in A.I.M.M.E. Tech. Pub. 112, 1928.

Pedersen's work, as originally intended, produced a pig iron. However, with ratios of silica to iron of 1:4 and reduction in situ, an iron silicon alloy may be produced. This alloy is not the usual composition of ferrosilicon and perhaps should not be referred to as such. This modification of Pedersen's process is attributed to Koritschner and Hansgirg and is covered in both British and French patents in 1924.

Electric furnace operation is generally preferred for smelting, but blast furnace operation has been accomplished. (U.S.B.M. experimentation was blast furnace adaptation.)

It might be mentioned that prior to Pedersen's process and after its discovery, there have been numerous patents granted for fusion processes to produce an aluminous slag. Practically every alkaline earth has been used with temperatures from sintering to fusion. Prepared alkalis as well as natural have been given preference. A review of other processes as compared to Pedersen's appears to emphasize but one difference

and that is the simultaneous production of pig iron. The writer fails to recognize any distinct advantage of the iron production as originally specified since iron ore and bauxite were used in the charge. However, if circumstances were reversed and a relatively high alumina clay accompanied an iron ore in a mixture which could be satisfactorily fluxed, there appears to be the distinct advantage of alumina as a by-product of pig iron production or vice versa.

The control of the process lies in the proper proportioning of ore and flux to form such calcium aluminate compounds as will between themselves form eutectics which will have low fusion temperatures. This stated condition would be relegated by the writer to the blast furnace procedure and should not be a criterion for electric furnace smelting.

Details of the process may be found in the several patents, the early publications concerning the process, or the reports from the U.S.B.M. Although the literature is somewhat revealing, the writer is of the opinion that check testing for any charging composition as well as for certain steps in the process would be advisable prior to any plant design or decisions as regards feasibility of the operation.

Essentially, the advantages of the Pedersen process are two. (a) The flux (lime) accomplishes two purposes in that it enables iron smelting at the same time that it produces calcium aluminates which may be leached. (b) The process is one of the several which recirculates the alkali leaching agent, the disposal of the silica being accomplished along with precipitation of calcium from the leach liquor. It would appear (since the alkaline leach liquors must be carbonated) that electric furnace smelting should have an advantage over the blast furnace in the higher concentration of CO₂ in the furnace gases, the same being used to carbonate the leach solution to throw down the lime. The pH range is so lowered at complete carbonation that the silica is precipitated. The writer is of the opinion that rather rapid agitation would be required in the carbonation step to produce a granular silica which could be filtered from the alkaline carbonate solution. Such details are not stressed in the literature.

The process undoubtedly has some bugs in it which are not described. The rather complex and complicated series of compounds which form from combinations of calcium, aluminum, and silicon are rather well known, the complete study having been accomplished in connection with the preparation of Portland cement, particularly the high alumina, early set cements. In fact, by-product slag cement from furnace operation is not uncommon. It may be anticipated that careful regulation and control would have to be exercised to produce the proper calcium aluminate for optimum leaching and prevent the formation of insoluble aluminosilicate compounds. Further, the silica will have to be precipitated in total, although this control is not so difficult but does limit the hydroxide alkalinity of the leach solutions which in turn affects leaching efficiency. No mention is made of possible recirculation of the precipitated carbonate although it has undoubtedly been found that it is impossible to separate the silica from the sludge. There is no reason why such material could not be disposed of as agricultural lime in this part of the country.

In conclusion, it would appear to the writer that although this process would naturally be limited in those locations where iron production is extensive, in such locations as the Pacific coast where the opposite is true, it would appear to have possibilities. This statement is even more true under the circumstances of cheap electric power. It is perhaps unnecessary to call attention to the horizontal integration which would be required through iron ore, coke, and limestone production. Fortunately, the process appears to be one for which suitable pilot plant data could be acquired on relatively

small scale and in an inexpensive manner so that proper preliminary data could be accumulated which would be dependable and applicable to the local raw materials.

The writer will be pleased to investigate the process further or abstract the details as described in the literature if requested to do so.

Respectfully submitted,

/s/ George W. Gleeson

Head
Chemical Engr. Department

Addenda: It is assumed that the other processes of Pedersen are not of interest. At hand is a translation of his writings in Teknisk Ukeblad which covers his acid leaching process. Reference is also made to the work of Tome (U.S.P. 906,338) for the preparation of ferro silicon or silicon by carbon reduction from calcined kaolin. This process is a straight reduction and does not include fluxing.

November 15, 1944

Mrs. A. C. Sturdavant
Route 2, Box 21
Forest Grove, Oregon

Dear Mrs. Sturdavant:

Receipt is acknowledged of your letter dated November 14.

About two weeks ago we planned to investigate your property and did make a trip into that area, but so much time was used up in some other work that we were unable to get to your place. We plan now, if the weather is satisfactory, to go out to your place day after tomorrow, November 17.

Very truly yours,

F. W. Libbey
Director

FWL: jr

Forest Grove, Ore.

Nov. 14th 1944 -

State Dept. of Geology & Mineral Industries
Dear Sirs: -

I'll drop you a few lines & ask
you when you folks will be out
here to look this land or clay over.

The county agent was out a few days
ago & talked to my sons, & he thinks
there is the right clay here & a swell
place to mine clay here, he aims
to come back again & look what
he can help me, but advised the
boys to write you folks again.

Do you want me to send you some
of the clay.

I thank you for an ans.

Yours very truly -

A. C. Stuedeman

P-3044 road cut in front of house

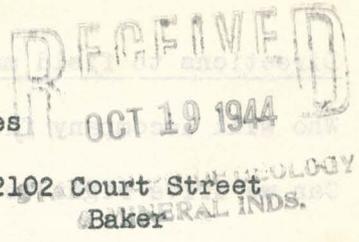
P-3045 first good

road cut a short distance south of house

REQUEST FOR INSPECTION OF PROPERTY

by

State Department of Geology and Mineral Industries
400 East I Street Grants Pass
702 Woodlark Building Portland
2102 Court Street Baker



PLEASE READ THIS CAREFULLY BEFORE FILLING IN BLANKS

Every blank should be completely filled in. The reasons are that: We cannot examine all of the properties we are asked to examine because we do not have enough engineers to go around. Our funds and personnel are limited. It costs the State a substantial amount for the examination of your property. We are just as anxious to examine it as you are to have us do so. Therefore, in order that there shall be no loss of time, we must know exactly where your property is, how to get to it, where to meet you or someone who can take us in, and how much there is to be seen. You'd be surprised how often people, in directing us to their own properties, give directions which are not clear or which are confusing or incomplete. Sometimes we lose hours or a full day which could have been saved if the blank had been properly filled in. Please give us a break and put down all the dope!

Fill in accurately all the following blanks as fully as possible (even if the answer is "No"), and mail this form to the office address above, nearest to your property. A field engineer will then get in touch with you and arrange for the trip.

Inspection requested by: Name: Anna C. Studavant
Address: Rt. #2 Box 21 Forest Grove Oreg.
Date: 194
Owner of property: Name: Anna C. Studavant
Address: Rt. #2 Box 21 Forest Grove Oreg.
What is property commonly called?
What is your own interest in property?
Location of property: County: Washington Postoffice: Forest Grove
SE 1/4 NE 1/4 Section: 28 Township: 2 N Range: 4 W
Owner: owner Partner:
Lessee: Other:

What is the problem that is bothering you most? In other words, is it geological, metallurgical (milling), mining, how to continue exploration, financial, or what?
I would like to have you inspect the clay & I'd like to see the site if there is aluminous on the place as I am sure there is aluminous on the place.
I hope this is satisfactory for the present.
Do you drill this clay or aluminous like oil or dig like coal. Please let me know when you are coming out so I'll be at home, to see you folks.

Directions to field man:

Who will accompany field man to property? *myself*

Can we drive right to the property? *yes* . . . What kind of road is it? *gravel* . . .

How far must we pack equipment, samples, etc., from the road? *road runs through place*

During what months is the property not accessible? *conceal before wet weather, wet days*

Detailed road and trail directions for getting from nearest Postoffice to property; or to place where field man will meet you or the guide:

come to Banks & go north to 2 gas stations turn west & go west over long narrow bridge & go on west about 1 mi. where the 4 mail boxes are at the 1st - turn north about 1/4 mi. & the 1st barn & house is our place

Description of property to be examined:

What kind of property: . . . Gold lode? . . . Placer? . . . Other? *Boxide clay*

History: Is the property a prospect? *yes* . . . A past producing mine now idle? *no* . . .

Is it producing now? *no* . . . During what periods was it in production? *never* . . .

Development: Describe the surface workings (open-cuts, pits, trenches) that are cleaned out so that we can see the rock or ore in place. . . .

There has never any development made on this place only I smell the odor that comes up from ground

How many feet of underground workings (tunnels, cross-cuts, drifts, shafts, raises) approximately are open so that we can examine the rock or ore?

none

How many dumps are there? *none* . . . Do you have a claim map of the property? *no* . . .

Map of workings? *none* . . . Assay map? *none* . . . Mill flow sheet? *none* . . . Engineer's report? *none*

How many samples have been taken and assayed? *none*

FOR OFFICE RECORDS ONLY

Date request received. 194 Date set for visit 194

Date property visited. *11/17* . . . 1944 by: *Libbey & Lowry*

Cost of inspection: Salary
Meals and Lodging
Car Mileage-cost at 4¢
Total

Abstract of U. S. G. S. report on
"The Molalla High-Alumina Clay Deposit Near Molalla,
Clackamas County, Oregon."

Following is a brief summary of a report prepared by Dr. Robert L. Nichols of the U. S. G. S. on "The Molalla High-Alumina Clay Deposit Near Molalla, Clackamas County, Oregon." In the abstract of this report it is stated that the deposit contains 31,294,000 dry tons of measured ore with 25.73 percent available Al_2O_3 and 7.75 percent available Fe_2O_3 . Indicated ore amounts to 17,298,000 dry tons containing 25.52 percent available Al_2O_3 and 8.49 percent available Fe_2O_3 . There is also a possible 50,000,000 wet tons of inferred ore.

Location and Accessibility

The deposit is along the west side of the Molalla River approximately $2\frac{1}{2}$ miles south and 3 miles southeast of Molalla. Molalla is approximately 16 miles south of Oregon City, 30 miles south of Portland and 30 miles northeast of Salem.

Scope

A total of 77 holes was drilled by the U. S. Bureau of Mines ranging in depth from 37 to 190 feet, with a total of $7,964\frac{1}{2}$ feet of hole drilled.

General Geology

The prospected area is in the Willamette Valley province, on a terrace about 170 feet above the Molalla River. Beneath a thin veneer of terrace deposits lies the Molalla formation. It contains transported and residual high-alumina clays; it has been greatly tilted; and it is of lower Miocene age. The area is located on a flat, extensive surface. There is a great deal of terrace topography in the quadrangle which makes possible the existence of great tonnages of high-alumina clay in the unprospected areas.

Mineralogy

Hydrous Aluminum Silicates:

Kaolinite, montmorillonite, beidellite-nontronite, and celadonite

Aluminum Hydrates:

Gibbsite

Other Minerals:

Siderite, limonite, hematite, ilmenite, pyrite, magnetite, vivianite, cristobalite, and zircon.

Chemistry

The following analyses were made on composite samples of the Upper Clay series and the Lower Clay series as defined by the U. S. Bureau of Mines.

These clay series are roughly equivalent to the South Ore body and the Lower Ore body considered later.

Analyzed After Drying at 130°C

	Upper Clay Series	Lower Clay Series
SiO ₂	45.5	43.6
Al ₂ O ₃ (total)	27.8	30.2
Fe ₂ O ₃ (total)	11.5	10.3
TiO ₂	1.8	1.8
ZrO ₂	0.0 ^x	0.0
P ₂ O ₅	0.13	0.19
V ₂ O ₅	0.0	0.0
CaO	0.3	0.3
MgO	0.4	0.3
K ₂ O	0.0	0.0
Na ₂ O	0.4	0.1
SO ₃	0.0	0.0
Ignition loss 950°C	<u>11.8</u>	<u>12.6</u>
Total	99.63	99.39
Organic carbon, C	0.43	0.33
Carbon dioxide, CO ₂	1.43	1.32

^x Note: 0.0 indicates less than 0.05 percent.

Lithology

The ore is found mainly in the Molalla formation. A small amount is also found in the No. I. Terrace deposit. Lithologically it consists mainly of plastic and semi-flint clay, breccia and weathered silt, sand, and gravel. Interbedded with the ore are silt, sand, and gravel; shale, sandstone, and conglomerate; and wood, together with gritty low-grade clay.

Accompanying the report are several maps including an Army Engineers quadrangle sheet, a geologic map of the area, plates showing location of the drill holes, columnar sections, structure sections, and a tonnage and assay map showing ratio of overburden, etc.

A summary of the results of the Bureau's drilling is shown in the tabulation on the following page.

MOLALLA HIGH-ALUMINA CLAY DEPOSIT, U. S. Geological Survey
 TABLE A SUMMARY OF DATA FOR ORE AND OVERBURDEN

Ore Body	Area Acres	Thickness Ore, feet	Wet Ore Tons	Dry Ore Tons	Avail. Al ₂ O ₃ %	Avail. Fe ₂ O ₃ %	Thickness Overburden
<u>MEASURED ORE</u>							
South	158.63	32.90	11,712,000	7,499,000	25.29	7.61	21.76
North	168.81	67.33	25,508,000	17,065,000	25.61	8.21	16.75
Lower	80.06*	58.38	10,489,000	6,730,000	26.54	6.74	42.49
<u>INDICATED ORE</u>							
South-west	112.51	63.76	16,100,000	10,880,000	28.10	9.52	16.77
Lower	128.83*	34.60	10,003,000	6,418,000	26.54	6.74	40.24
<u>TOTAL MEASURED AND INDICATED ORE</u>							
Totals & averages		52.17	47,709,000	31,294,000	25.73	7.75	23.76
Totals & averages		48.19	26,103,000	17,298,000	27.52	8.49	29.30
Totals & averages		50.69	73,812,000	48,592,000	26.37	8.01	25.82
<u>INFERRED ORE</u>							

Geologic data suggest that the inferred ore may be 50,000,000 wet tons.

* The Lower ore body is beneath the South and North Ore bodies.

Sent by
G.W. Gleason

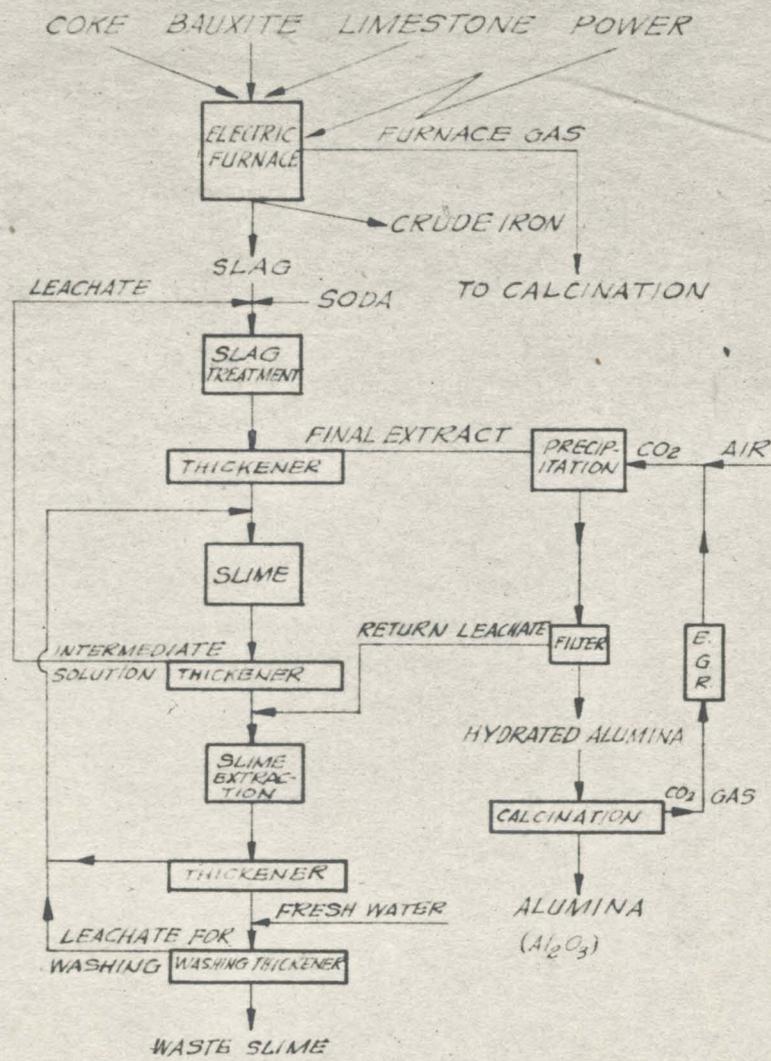


FIG. 1.

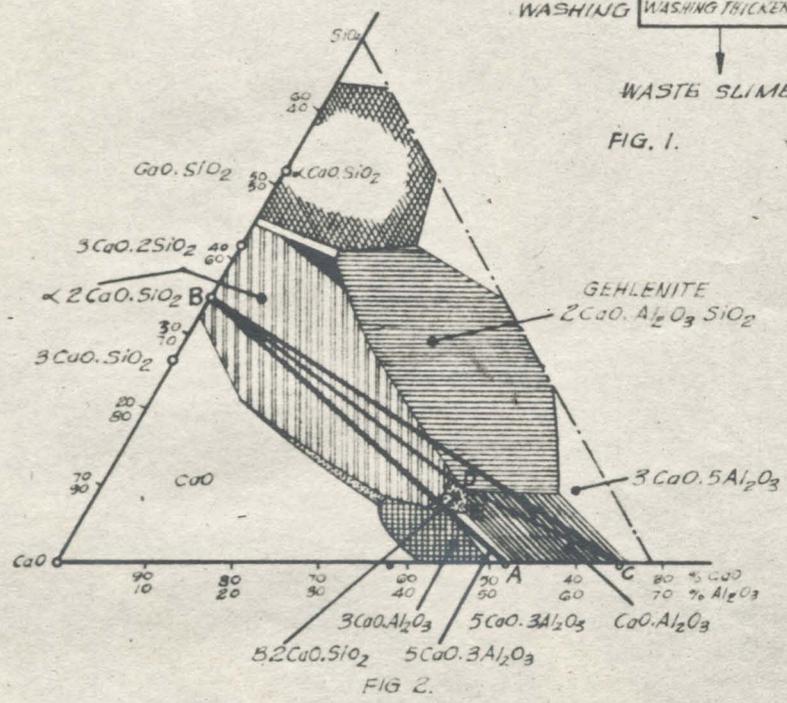


FIG. 2.

DRAWN BY D.H.	UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF MINES METALLURGICAL DIVISION SALT LAKE CITY, UTAH. ARTICLE BY H. PEDERSEN, H. GINSBERG AND F.W. WRIGGE.	DATE 12-20-44.
TRACED BY		SCALE
CHECKED BY W.M.S.		L-272-42
APPROVED		SHEET 1 OF 1
REFERENCE		
REVISED		

BAYER PROCESS RED MUD TREATED FOR
ALUMINA RECOVERY

Although other processes have been used to some extent elsewhere in the world for the extraction of alumina from ores and clays, the Bayer process is the one used most extensively, and exclusively on this continent. Bauxites relatively low in silica (say, 5 Percent or less) have always been considered necessary for this process because silica carries approximately 1 lb. of alumina, 1 lb. of soda ash and 1 lb. of lime into the red mud--the waste product of the process--for each pound of silica present in the bauxite. Even high grade bauxites such as those available from Dutch Guiana have not previously made possible a recovery of more than about 80 to 85 percent of the alumina present. To use a bauxite higher than, say, 7 percent silica in an ordinary Bayer process plant without some auxiliary method of recovering values from the red mud would result in a high and uneconomic loss of alumina and soda.

U. S. Alumina Reserves

The United States has only small reserves of high grade bauxite, especially in Arkansas, but considerably larger reserves of lowgrade material ranging in silica content from 10 to 30 percent. In addition, it has large supplies of high-alumina clays but these latter have not so far proved attractive in comparison with bauxite of even moderate quality. The reasons for this fact are twofold: not only do bauxites run higher in alumina, but the form in which the aluminum is combined is preferable to that in clays. In clays, the aluminum is present in the form of complex silicates, whereas in bauxite, it exists as a tri-hydrate which is readily soluble in caustic soda solutions at reasonably elevated pressures and temperatures.

Where the Bayer process alone would recover not over 70-85 percent of the alumina in the bauxite, depending upon the grade of bauxite used, the combination

process recovers up to about 95 percent, even with lower grade ores. At present, 13 percent silica is the average content of the bauxite being processed. In addition, the combination process recovers 60-65 percent of the soda charged to the Bayer process, thus materially decreasing lime and soda ash requirements.

It seems clear at present that the combination process is economic in the bauxite range from 7 to 15 percent silica. It may also be found that it can be applied effectively, owing to savings in soda and increased recovery of alumina, to bauxites of less than 7 percent silica.

(Taken from "Chemical & Engineering -- January, 1945.)

4-12-58

Vessel Here With Ore

Two hundred tons of sacked alumina, in powder form, arrived in Portland Thursday on the American Mail liner Oregon Mail consigned to Harvey Aluminum Co., the first alumina for the new processing plant at The Dalles.

The ship was scheduled to be discharged Friday into a barge at Terminal No. 1 and will be held by Willamette Tug & Barge Co. until next week when it is to be put through the new unloading plant being completed on the east side of the river near the Northwestern grain dock.

This shipment is in the nature of a trial shipment to initiate operation of the Airveyor suction unloaders mounted upon a barge at the east side plant. It will be loaded into freight cars and transported to The Dalles.

A larger shipment is expected about May 1 and soon afterward the movement is to be stepped up to whole shiploads at a time.

The Oregon Mail also brought Japanese plywood, nails, canned goods and other general cargo for unloading here.

Another American Mail line vessel, the Canada Mail, arrived at Longview Thursday, to discharge bagged Columbite ore from Penang, consigned to Middle West steel mills, some sugar and mahogany from the Philippine Islands.

The two vessels entered the Columbia River only 30 minutes apart Wednesday.

Oregonian
8-5-58

Harvey Plant In Operation

Production Begun At The Dalles

Harvey Aluminum Co.'s new multi-million dollar aluminum reduction plant west of The Dalles has started production and the firm will begin delivery of its first commercial output of the primary metal within approximately 60 to 90 days, it was announced Monday by Lawrence A. Harvey, executive vice president.

Capacity of the new smelter is more than 100,000,000 pounds on an annual basis. The reduction facilities consist of two potlines comprising a total of 240 pots.

Designed by Harvey Aluminum engineers the reduction works incorporates the latest and most efficient equipment and operating techniques including automatic control systems throughout, it was reported by Harvey. The electrolytic cells in which the primary aluminum is produced were designed, engineered and built by Harvey Aluminum at its Torrance, Calif., plant.

The operation of the new reduction plant rounds out the activities of the company which has been a long-time fabricator of aluminum mill products, Harvey declared.

4-24-60

Harvey to Jump Plant Capacity At The Dalles

THE DALLES (AP) — Harvey Aluminum Corp. announced plans Saturday for a 25 per cent increase in the capacity of its aluminum reduction plant at The Dalles.

The firm also has filed an application with the Securities and Exchange Commission for sale of 750,000 shares of common stock to finance the expansion.

10-7-60

Harvey Plans 2nd Aluminum Plant in NW

PORTLAND (AP)—The Harvey Aluminum Company announced Thursday it will build another aluminum production plant in the Pacific Northwest, and might place a sheet mill there also.

President Leo Harvest said, however, in a telephone call from Torrance, Calif., that a tax fight with Oregon might weigh against placing the sheet mill in Oregon.

He was referring to the quarrel his firm has with the state over assessments on the present production plant at The Dalles.

The firm's announcement said that the new production plant will double the present The Dalles production of 75,000 tons of aluminum a year.

The firm recently completed a 20-year power contract with the Bonneville Power Administration, calling for an additional 75,000 kilowatts of firm power and 75,000 kilowatts of secondary power.

Big Shipment of Alumina Being Unloaded by Belt

PORTLAND (AP) — A big conveyor belt Saturday began pulling 1,450 tons of bulk alumina from the hold of a freighter here.

The alumina is the first of a series of shipments from Japan to the Harvey Aluminum Co. plant at The Dalles.

It will be carried to the plant in the Columbia River town by 52 special hopper cars.

5-4-58

Northwest May Be Site For New Aluminum Mill

Leo Harvey, president of the Harvey Aluminum Co., Thursday announced that the Harvey board of directors had authorized the construction of the first phase of an aluminum sheet, plate and strip mill plant and that the Northwest is a possible site.

Harvey also stated that the board had authorized the company to go ahead with the construction of a new aluminum pig plant in the Northwest with the construction to begin in 1961 and production scheduled for 1963.

The new plant would produce some 75,000 tons of aluminum pig a year. Added to the company's production at The Dalles, which is being expanded to a total capacity of 75,000 tons, the new facility would give Harvey a total pig capacity of 150,000 tons a year.

It is to take care of some of this massive pig production that the Harvey company is to build the new sheet and strip mill, Harvey explained.

Tax Problems

While he said the Northwest is not ruled out as a possible site for the 1,500 to 2,000-job sheet and strip project, he said that the company's tax struggle with the state of Oregon was against such a move. "So far all we do is fight up there," he said in a telephone call from Torrance, Calif. "We don't have the time for that—we have to produce pig aluminum," he added.

The Harvey plant at The Dalles is in the middle of a tax hassle with the state and is supported by the local assessor at The Dalles.

Harvey has maintained that the state has not allowed them "equal treatment" after the state put aside an approved assessment by the Wasco County Board of Equalization.

Harvey's announcement Thursday also stated that the company has completed a 20-year power pact with the Bonneville Power Administration providing Harvey with an additional 75,000 kilowatts of firm

power and 75,000 kilowatts of secondary power.

This power pact cleared the way for the announcement of the new pig plant, which definitely will be in the Northwest, though Harvey said the company has not decided which side of "the river" the company would build on.

Harvey said the pig producing site would be chosen by July of 1961.

The sheet and strip mill is the important item in the new announcement. The Northwest has been restricted to making of aluminum pig to date with the job producing fabrication work done in other, bigger market areas. The close to 2,000 jobs at this plant would be the Oregon area's first big return from the power consuming aluminum industry in terms of payroll.

The Harvey announcement indicated that the sheet and strip production would be used for such manufacturing jobs as containers, special cans, metal boxes, truck floors and body structures, railroad cars, automotive pistons, wheels, brakes, engine blocks, trim and so on.

5-12-57

Oregonian 12-29-57

Harvey Hires More Crews

THE DALLES (Special)—One hundred more men were employed at the Harvey Aluminum Co. plant site west of The Dalles in April than in March, according to the Oregon employment service monthly report. A total of 386 workers were employed there in April.

Harvey Plant Tests Due, New Apparatus Installed

Electric power tests at the Harvey Aluminum company's new reduction plant at The Dalles will start soon, with the first molten aluminum scheduled to be poured early next year, Lawrence A. Harvey, ex-

ecutive vice president, has announced.

Virtually all of the electrical apparatus for the new plant has been supplied by Westinghouse Electric corporation. The apparatus totals more than \$7,000,000 in electrical equipment.

The plant will use about ten kilowatt hours of electricity for every pound of aluminum produced. At Harvey's planned capacity rate of 108,000,000 pounds a year, this would equal the total average annual electrical consumption by 360,000 homes.

The electrical apparatus includes 32 ignitron rectifier cubicles, which occupy a building two blocks long. Also included are outdoor transformers, voltage regulators, switchgear and circuit breakers and auxiliary equipment such as meters and controls.

Power Received from BPA

Electric power will be received from Bonneville power administration lines at 115,000 volts alternating current. The transformers, voltage regulators and rectifiers will convert this electricity to 700 volts direct current.

This electricity then will be fed into banks of electrolytic cells in two potlines where white, flour-like aluminum oxide is reduced to molten aluminum.

The oxide is derived from bauxite ore through a chemical process. It is shipped across the Pacific from Japan and will move on barges up the Columbia to the Harvey plant.

Aluminum from the plant will be shipped to Harvey's fabricating facilities to be processed into aluminum mill products.

HARVEY Aluminum

A Division of HARVEY MACHINE CO., INC.

ALUMINUM
Extrusions & Structural
Rod & Bar
Tubing & Pipe
Impact Extrusions
Forgings
Screw Machine Products

• GENERAL OFFICES: 19200 South Western Avenue, Torrance, California

January 8, 1958

RE: Your letter of
December 30, 1957

Mr. Ralph S. Mason
Mining Engineer
State of Oregon
Department of Geology
& Mineral Industries
1069 State Office Building
Portland 1, Oregon

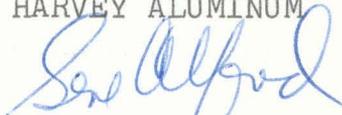
Dear Mr. Mason:

During the past year, our company has developed a process by which alumina can be produced from the laterites located in Oregon. It is the ambition of the company to help encourage the mineral industry in Oregon so that a development of this nature can play an important role in the state's economic growth and diversification.

Thank you for your interest in our company.

Sincerely,

HARVEY ALUMINUM



Gene Alfred
Director of Public Relations

GA:dp

US Bill

INDUSTRY NEWS

May 1960

(The following comprises news items of general interest selected during the month from various sources. The report is prepared primarily for internal use within the Bureau of Mines for information purposes. Individual items normally are condensed versions of stories as they are printed; however, no specific evaluation of the material is made for the purpose of editing out misleading or inaccurate information.)

METALS

Aluminum. - The executive vice president of Anaconda Aluminum Co. announced that production at the Columbia Falls, Montana, aluminum plant is expected to increase to 100 percent of capacity this summer, up from the 87-1/2 percent of capacity at which the plant has operated previously. (Western Industry, April 1960)

Harvey Aluminum, Inc., Torrance, Calif., announced a proposed 25 percent expansion of its aluminum reduction facility at The Dalles, Oregon. Substantial addition to fabrication facilities at Torrance, Calif., also is contemplated. The aluminum reduction facility at The Dalles last year produced approximately 58,000 tons of primary aluminum. The company has filed with the Security and Exchange Commission a registration statement for sale of 750,000 shares of common stock to finance the expansion program. The company heretofore has been wholly owned by the Harvey family. (American Metal Market, April 21, 1960)

Copper. - Plans for a multi-million dollar Butte mining development program were announced by The Anaconda Co. E. I. Renouard, vice president of The Anaconda Co., stated that the company contemplates expenditure of more than \$11 million in the next five years to tap high-grade copper ore reserves at deep levels and to complete a new underground central pumping station. It is the largest underground development program at Butte since the Greater Butte project was started in 1947. Highlights of the deep-level mining project by the company include: (1) Deepening and concreting the large Kelley No. 1 shaft by 1,718 feet to the 4,600 foot level to establish a central hoisting shaft. (2) Institution of haulage ways connecting with the Mountain Con, Steward, and Leonard mines to accommodate large underground motors and cars of the type presently used at the Kelley mine. More than a mile will be traversed in bringing ore from the Leonard mine to the Kelley shaft. (3) Construction of a large engine room, 33 feet wide by 45 feet long and 23 feet high, on the 3,900 foot level of the Steward. (4) Sinking of the Steward